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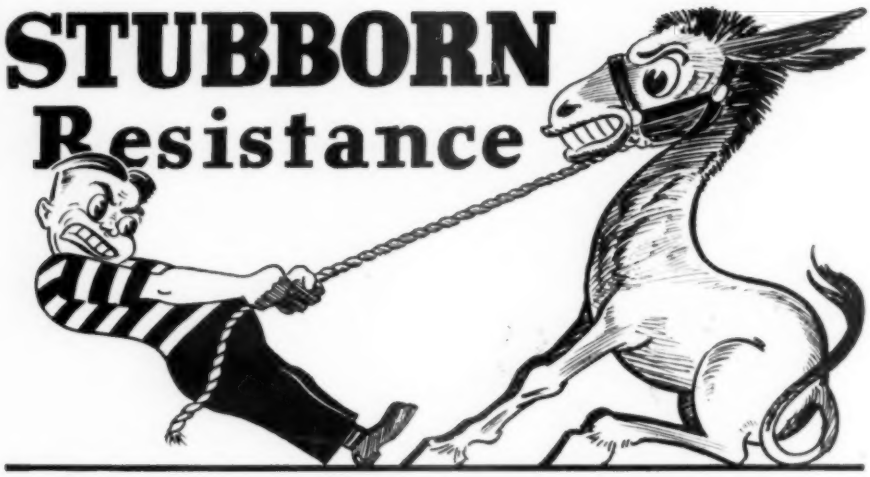

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VOL. 30 JANUARY, 1944 No. 1

Original Articles

PRESENT DAY LINGUAL ARCH THERAPY

JOHN W. ROSS, D.D.S., PHILADELPHIA, PA.

THE purpose of this paper is to discuss appliance therapy. Diagnosis will not be discussed except as it may be explanatory of a certain type of treatment. The philosophies of tooth movement are outside the scope of this presentation.

The appliances and therapy to be discussed are the lingual and labial arches. They have been used successfully by Dr. Mershon and me for more than twenty-five years. This period of time has given ample opportunity to observe results long after the removal of appliances.

We are able to treat successfully with the lingual arch and its various attachments about 85 per cent of all orthodontic conditions. With the exception of open-bites, all other cases can be treated with a combination of the lingual and labial arches.

Orthodontic treatment today reflects two schools of thought: In one, appliances are used at intervals throughout the patient's growth period producing changes as the child grows and develops, with frequent periods during which appliances are removed in order to allow natural adaptation of the tissues to the new positions of the teeth, and reaching completion at the time the patient reaches adulthood. In the other, appliances are used to align the teeth as rapidly as possible, the case then being carried on with retentive plates of the Hawley or a similar type.

These conflicting concepts have given rise to confusion in our thinking. Many men erroneously believe that certain appliances are "fast tooth movers" while others are "slow tooth movers." This is not true. The rapidity of tooth movement depends upon the amount of pressure exerted upon the teeth by the appliance and the ability of the organism to react to this pressure and maintain the changes made.

Read before the New York Society of Orthodontists, Nov. 8, 1943.

This erroneous idea of the lingual arch is probably due to the fact that Dr. Mershon, the originator of the removable lingual arch, is also an advocate of intermittent treatment throughout the growth and developmental period of the patient. With this fact in mind, people have come to the false conclusion that because he opposes rapid treatment and because he uses the lingual arch, the lingual arch is incapable of moving teeth rapidly. Teeth can be moved as rapidly with the lingual arch as with any other appliance. However, the treatment described in this paper is based on my belief in the greater safety and better results of periodic treatment during the developmental period.

The principal conditions which call for orthodontic treatment are:

1. Where the eruption of the teeth is in advance of the development of the jaws.

2. Where the teeth of the mandible are outside and too far mesial in relation to those of the maxilla.

3. Where the teeth of the mandible are distal in relation to those of the maxilla.

4. Where the maxillary teeth are mesial in relation to the face and skull.

5. Where the mandibular teeth have erupted in excess of the normal curve of Spee.

While the basic construction of the lingual arch is well known to all orthodontists, I think it important to point out certain facts which, if not understood, make the lingual arch unsatisfactory in many hands.

Molar bands must always fit accurately. The half-round tube on the lingual surface must be carefully made and the post must fit it accurately. Carelessness in fitting the post to the tube explains many failures. The half-round tube is frequently not placed sufficiently high on the maxillary band, with the result that the lingual cusps of the mandible strike against the arch and cause breakage. The arch wire should be of a material which is capable of exerting pressure over a long period. We have found gold-platinum wire most satisfactory for the main arch because of its ease of adaptation, its ability to retain its elastic limits over a long period of time, and its retention of its inherent properties after attachments have been soldered to it. Of course, if attachments are soldered to the main arch over and over again, it will eventually lose its tensile strength.

In soldering the auxiliary spring to the main arch, the spring wire is dipped in flux and a piece of low-heat 14k solder is picked up. The solder is then barely melted on the spring wire, which is then touch soldered to the main arch, the heat being kept on the main arch.

The auxiliary spring should be soldered at an obtuse angle in relation to the main arch and should then be bent around so that it lies directly under the arch. Further bends may then be made.

Auxiliary spring wire is usually 0.020 or 0.022 inch soldered to the gingival side of the main arch and adjusted to produce pressure at the lingual-gingival border of the teeth, causing them to move to the desired positions in the dental arch. The adjustment of auxiliary springs is generally looked upon as easy, but it is a difficult technique because the spring should lie exactly at the

gingival border of the teeth and carry a slow, continuous pressure over a long period of time. If not precisely adjusted, the wire often works up on the tooth. This causes tipping of the teeth at times. At other times the wire may slip into the gum tissue and cause irritation. Criticism of the lingual arch comes from those who do not know how to construct and use it properly.

Let us consider the reasons for treating some cases with the main arch alone, and others with the aid of auxiliary springs.

Fig. 1 shows the type of case which should be treated by adjustment of the main arch alone. When using the main arch, we usually establish the distance between the half-round posts with a Boley gauge. If adjustment is to be made in the canine region, it is wise to determine the width at that point with a second caliper.

Much of our initial work calls for the use of auxiliary springs. Where there is insufficient space for a tooth or teeth, we use various types of auxiliary springs. They are used when teeth need to be moved en masse. We use them when a great deal of isolated movement is needed in one part of the arch. After such gross changes have been made, or if they are not needed, the lesser changes and general conformation of the dental arch can best be accomplished through the use of the main arch wire. If the lingual arch is gradually reshaped to the desired dental arch form and is placed in the mouth and given sufficient time, the teeth will adapt to the new form created in the lingual arch.

These changes must be made gradually, and sufficient time must be allowed for adaptation of the teeth to the new arch form. Adjustment of the main arch should not be made until the entire force contained in it has been expended and it is loose in relation to the teeth. Adjustment of the main arch is especially valuable when there is a dissimilarity between the left and right sides of the dental arch.

Fig. 2 shows the type of case which is treated by the main arch alone.

The material in the main arch is usually sufficient for the adjustments needed to treat a case from beginning to end. If more material is needed, the half-round posts are moved distally on the main arch in order to give additional length. If that is insufficient, a new arch is made.

Fig. 3 shows the difference in the amount of arch material between the original and treated case. This shows that frequently all that is needed is a rearrangement of teeth rather than a pronounced increase in arch dimensions.

The lingual arch is used for the finishing of cases after gross tooth movement has been accomplished and in cases in which readjustment of the dental arch to facial form is needed. In short, we use auxiliary springs when space must be created for individual teeth. When there is sufficient room for each tooth but the shape of the dental arch is at fault, we prefer to use the main arch for making the needed changes.

The shifting of teeth to the left or right of the median line is accomplished by soldering a small spring to the gingival side of the main arch. It is then bent into a U-shaped loop and extended through the proximal spaces of the teeth after it has been disked flat.

Fig. 4 shows the type of spring used for mesial or distal movement of anterior teeth.

Fig. 5 shows the type of spring used for shifting premolars and for the opening and closing of spaces.

By decreasing the size of the loop, tension is brought on the distal surface of the teeth. This produces movement in the desired direction. The amount of pressure must be very slight.

Fig. 6 shows a case in which the maxillary central incisor was completely knocked out. It was decided to close the space with the remaining natural teeth on the right side. Each tooth was moved up a space. This was done with a lingual arch with a loop spring as shown.

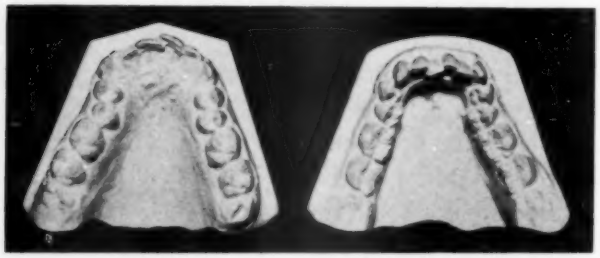

Fig. 1.

Fig. 2.

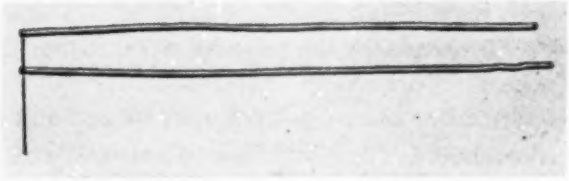

Fig. 3.

Fig. 7 shows the occlusal view before and after treatment.

Fig. 8 shows the case before and after treatment.

Lateral movement of the premolars is accomplished by the use of a recurved spring soldered opposite the first premolar and bent so that the other end comes in contact with the first and second premolars.

If the bend is made where the auxiliary spring is soldered to the main arch, most of the pressure will be on the second premolar. If bent where the loop is made, most of the pressure will be on the first premolar. This spring

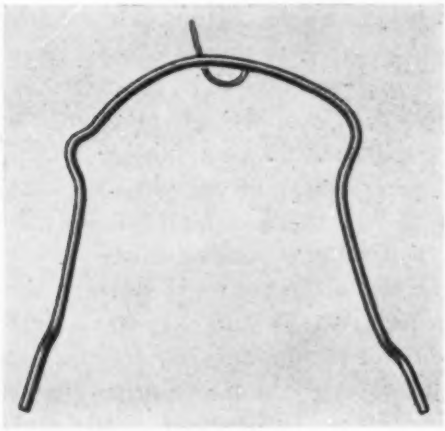

Fig. 4.

Fig. 5.

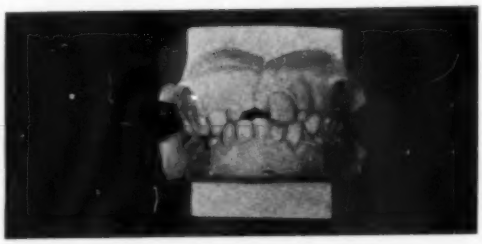

Fig. 6.

Fig. 7.

Fig. 8.

is the most efficient method we have found for carrying into occlusion premolars which are lingual to the arch form (Fig. 9).

When one premolar needs to be moved laterally, it is better to use a spring soldered just anterior to the post. It is bent in such a way that the free end of the spring engages the lingual-gingival border of the first premolar.

When the second premolar alone needs to be moved, a spring is soldered opposite the canine region of the arch and carried back so that the free end of the spring engages the second premolar only.

The spring used to move the canines laterally is a plain spring soldered in the region of the second premolar and carried forward.

The free end of the spring in contact with the canine should be adjusted so that it hooks the canine at the mesial-lingual-gingival border. This means that the end of the spring must be bent gingivally and the end then curved to fit the curve of the tooth.

As stated before, lateral movement of the molars is accomplished through the use of the main arch adjustment.

Labial movement is accomplished through the use of auxiliary springs. When anterior teeth need to be carried forward, two auxiliary springs are soldered to the main arch, one on the left, the other on the right. They should be soldered opposite the first premolar and carried forward along the arch and adjusted to come in contact with the central or lateral incisor, or the canine. Two or more may be in contact as the case requires. This type of spring must be curved so as not to impinge on the gingival tissues.

When the canine is labial and there is no room for it between the lateral incisor and first premolar, a recurved spring soldered opposite the first premolar and carried forward to the space between the central incisors and then recurved with the free end engaging the lateral incisor is very effective.

This spring is adjusted by throwing out the free end by a bend in the loop. There should be a stabilizer on the premolar at the same time. We move the anteriors mesially when mesial development is indicated. A careful diagnosis must be made in these cases in which the canine is labial and the lateral incisor is in contact with the first premolar. We must determine whether the anteriors need to be moved mesially or the premolars and molars distally in order to make room for the canine. The handling of such distal movement will be discussed later.

It is impossible to discuss all types of springs used in tooth movement. Those listed are basic. Each operator makes many variations from the standard forms as the case requires. We have found that, if properly adjusted, these springs provide the desired movement without tipping.

Rotations of canines and premolars are best accomplished by banding a tooth with a spur soldered to the labial surface of the band away from the direction of tooth movement. An auxiliary spring is soldered to the lingual arch in such a position that the free end is opposite the interproximal space of the tooth to be moved. A loop is then bent in the free end of this spring. The spring is adjusted lingually from the main arch in order to produce pressure. A ligature wire connects the free end of the auxiliary spring with the spur on the tooth. This is a very efficient method of rotating individual teeth. Another method of rotating premolars is through the use of a loop

Fig. 9.

Fig. 10.

Fig. 11.

spring resting against the surface of the tooth to be rotated, as shown in Fig. 15. This is especially satisfactory if the rotation is slight.

The adjustment of molars is easily accomplished by making a bend in the main arch where the half-round post is attached to the arch in the direction in which the rotation is desired.

The number of anterior rotations necessary after the teeth have been carried forward with an auxiliary spring on the lingual arch is negligible for the reason that, in carrying the teeth forward, the springs may be adjusted so that they produce rotation together with mesial movement. However, there are cases in which rotations must be made independently. One method is to band the tooth and ligate it to the auxiliary spring, making the proper compensations in the spring in order to give the correct directional force. When multiple rotations of maxillary anterior teeth are needed, springs are soldered to the lingual side of the lingual arch and adjusted to the proper arch form. An 0.030 inch wire is then carried between the canine and premolars, labially, to make contact on the opposite side of the mouth.

Fig. 16 shows the labial extension from the lingual arch. It is very useful when central and lateral incisors are to be carried lingually. In lower anterior rotations, this labial extension from the lingual arch will take care of the majority of corrections. It is also used with canines but is less advantageous.

We have found the most efficient plan for depressing the mandibular anteriors to be the appliance which we call a depressor, as shown in Fig. 20.

This appliance is a close-fitting mandibular lingual arch with extensions of 0.030 inch wire soldered opposite the lingual surfaces of the mandibular anteriors and bent in hooks over the occlusal surfaces of the teeth to be depressed. By lifting the arch slightly and making hooks over the anteriors, we are able to apply sufficient pressure to depress the teeth in their sockets. If additional tension is desired, a bend may be made opposite the second premolar. This appliance should not be adjusted oftener than once in two or three months.

From the experience of the orthodontist and prosthodontist, it is a well-established fact that bites cannot be opened in excess of the normal muscular length. This being so, regardless of the method used, these cases are treated by depressing the mandibular anteriors. Even if an elongation of the posteriors is accomplished, it cannot be maintained because of the dominance of the muscular pull.

We feel that bite plates of the vulcanite or acrylic types, which cover the roof of the mouth, are not only inefficient but have the added disadvantage of having a detrimental effect on the oral tissues.

In many cases of Class II closed bites, we depress the mandibular anteriors as an expedient in correcting the distal occlusion, realizing that, in many of these cases, the bite would have eventually opened. However, due to the locking action of the mandibular anteriors, the mesiodistal correction cannot be made until the mandibular anterior teeth have been depressed and the locking effect has been relieved.

This type of treatment has been very useful in helping the periodontist with adult cases. We have had several cases of people in late middle life in

Fig. 12.

Fig. 13.

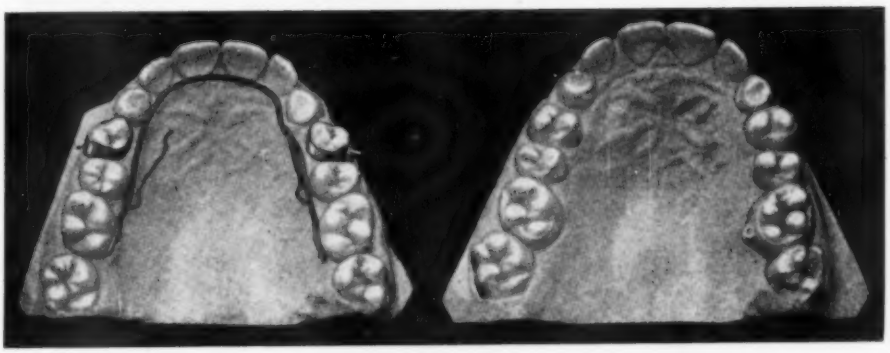

Fig. 14.

Fig. 15.

whom the mandibular anteriors were biting very heavily against the gingiva behind the maxillary anteriors. Such patients have been kept comfortable by depressing the mandibular anteriors. At times the correction is maintained,

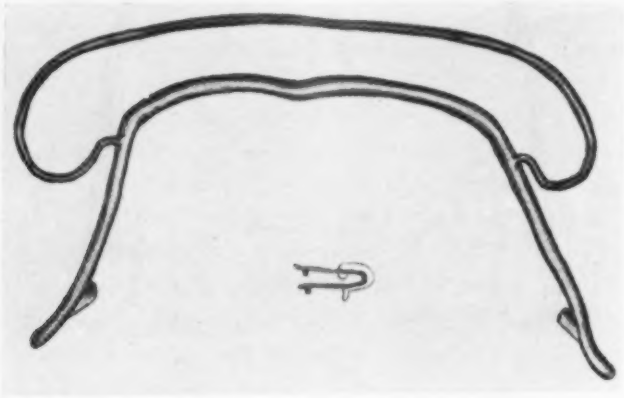

Fig. 16.

Fig. 17.

Fig. 18.

but at others the treatment must be repeated at intervals as a palliative remedy. We are able to depress the maxillary anteriors by the use of a similar attachment soldered to the maxillary labial arch.

Another method of treating deep overbites in which the overeruption of the anteriors may be in either the maxilla or the mandible is the placing of a

Fig. 19.

Fig. 20.

Fig. 21.

maxillary lingual arch with hooks soldered to it. The hooks are bent over the occlusal edge of the maxillary incisors. It is made in the same way as the mandibular depressor. In addition to the hooks, there is a lattice framework which extends from the canine region on the left to the canine region on the right. When the mouth is closed, the mandibular anteriors bite against this framework with the result that it is impossible for the molars and premolars of the mandible to occlude with those of the maxilla. All pressure must be divided between the maxillary and mandibular anteriors. Sometimes the teeth of the maxilla as well as those of the mandible depress, thus equalizing the maxillary and mandibular anteriors.

In Class II, Division 1 cases, the usual procedure is to use the mandibular lingual arch and maxillary labial arch, with intermaxillary hooks soldered in the canine region of the maxilla carrying intermaxillary elastics to hooks on the buccal side of the mandibular molar bands.

In Class II, Division 2, there is a definite underdevelopment of the mandible, and the maxillary incisors are retruded lingually to such an extent that it is impossible for the mandible to develop forward with the maxillary incisors in this position. The maxillary central incisors are sometimes lapped and in some cases the lateral incisors are in their relatively correct position and the central incisors are tipped lingually. The positions the maxillary central incisors assume may vary, but they are always retruded, locking the mandible and preventing its forward growth. In this type, the apices of the anterior teeth are usually almost in their correct positions and the crowns are tipped lingually.

The first step in treating these cases is the anterior movement of the maxillary incisors to the correct position in the arch. This is done by using a maxillary lingual arch as the first appliance. The mandibular incisors in this type of case may be biting into the gingival tissue at the lingual side of the maxillary central incisors, and if the usual type of lingual arch were placed, the mandibular anterior teeth would strike the maxillary lingual arch. For this reason, the maxillary lingual arch must be fitted back of the occluding mandibular anterior teeth. This is the so-called cut-back arch.

The next procedure is to solder two springs of 0.020 inch wire on each side, coming forward and resting at the gingival border of the incisors in order to produce the desired mesial movement. At the beginning of this treatment, the mandibular teeth, in mastication, may drive them slightly into the soft tissues by biting on these springs, but when the muscles are relaxed this does not occur. As soon as the maxillary incisors begin to move, the springs are cleared and no further difficulty is experienced.

Fig. 22 shows the anterior view of such a case. The first step was the mesial movement of the maxillary anterior teeth.

Fig. 23 shows the left side of such a case, before and after the maxillary anterior teeth had been moved mesially.

Fig. 24 shows the right side of the same case.

Fig. 25 shows the occlusal view at the beginning and the change made through treatment, and the arch used to make the change.

In this case the mandible did not develop sufficiently to correct the distal occlusion. Therefore, the next step was the placing of intermaxillary elastics.

The treatment just discussed for this type of case in which the maxillary anteriors were moved mesially is one stage in treatment. Moving the mandible mesially through the use of intermaxillary elastics is the second step in treatment. This led me to develop a new procedure which I shall present at

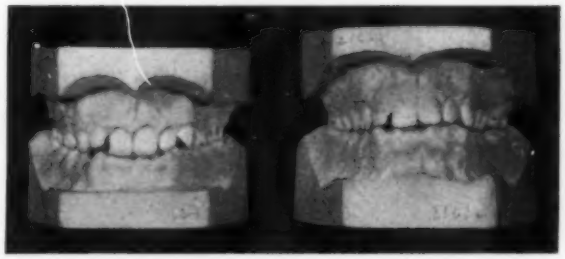

Fig. 22.

Fig. 23.

Fig. 24.

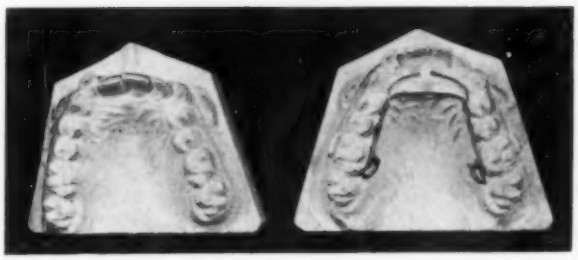

Fig. 25.

this time. In the past, such a correction has been made in the two steps described above. I have combined them into one step by using a lingual arch, without any labial arch, with intermaxillary elastics from maxillary to mandibular lingual arch. This procedure has been used long enough and on a

sufficient number of cases to justify its presentation as a new and satisfactory method of treatment. We have found the use of intermaxillary elastics from maxillary to mandibular lingual arches more efficient than their use from maxillary labial arch to mandibular lingual arch because the pull is more nearly in a straight line and there is less cuspal interference.

Fig. 26 shows this appliance in place. The mandibular lingual arch has hooks soldered occlusally on the arch in a position between the half-round post and the end of the arch.

Fig. 27 shows the intermaxillary technique from maxillary lingual to mandibular lingual arch. The attachment on the molar band is a half-round post and tube.

Fig. 26.

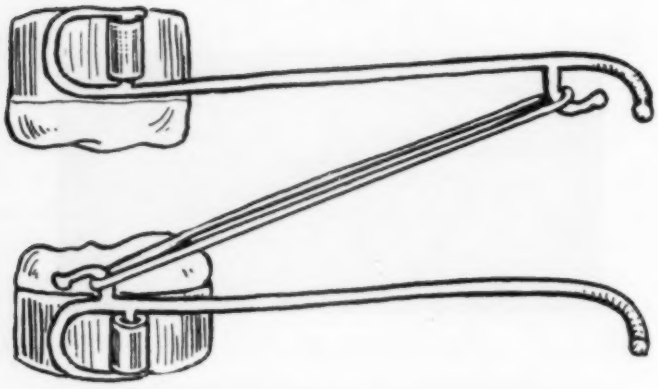

Fig. 27.

When we wish the bulk of tooth movement to be a mesial movement of the mandible, extensions are soldered to the maxillary lingual in such a way that they come in contact with the mesial surface of the maxillary first premolars on each side. This serves to stabilize the arch. Intermaxillary hooks are soldered at the canine bend of the maxillary lingual. Intermaxillary elastics are worn lingually.

When we first started this method of treatment, we expected a great many of the maxillary linguals to drop, but this has not occurred. We have no more difficulty in maintaining the arch in its lingual-gingival position than with the usual use of the lingual arch. In short, the desired result is accomplished without tipping or other disadvantages.

Fig. 28 shows a distal occlusion in which the maxillary anteriors needed to be carried mesially and the mandible needed to be moved mesially in order to correct the occlusion and the facial line. Maxillary and mandibular lingual arches were placed, and the maxillary anteriors were carried mesially by means of two auxiliary springs. Intermaxillary elastics on lingual arches were worn at the same time for the purpose of bringing the mandible forward.

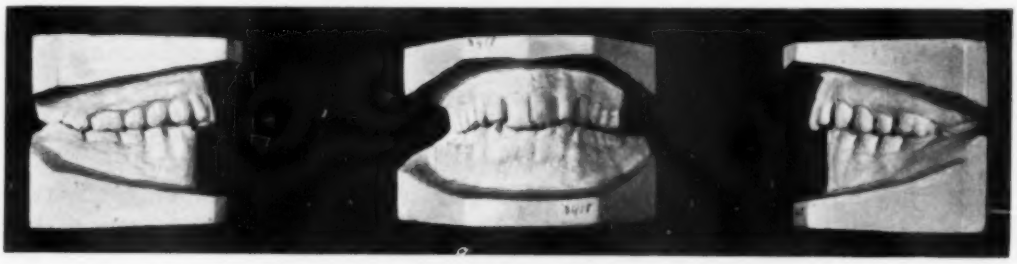

Fig. 28.

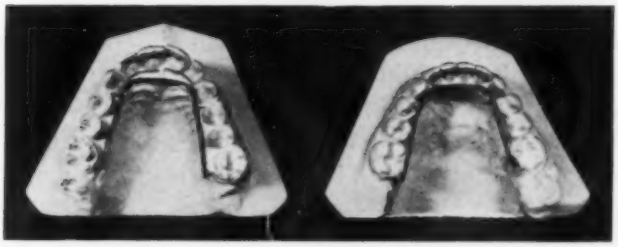

Fig. 29.

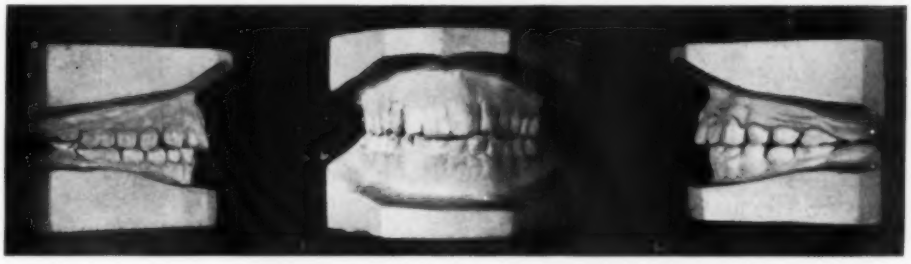

Fig. 30.

Fig. 29 shows the progress made. It is an occlusal view with appliances in place. Note the stabilizer in contact with the mesial surface of the maxillary first premolars. This shows how the auxiliary springs have carried the maxillary anteriors mesially, at the same time that intermaxillary elastics were worn from hooks opposite the maxillary canine region to hooks distal to the post in the mandibular lingual arch.

Fig. 30 shows the progress in treatment.

In cases in which we wish to move the maxillary molars distally on both sides, a plain maxillary lingual arch without stabilization on the premolar is used. The contact of the teeth is such that the lingual arch has no bends. With this method we are able to produce a distal movement of the maxillary

molars, thus creating space between the maxillary second premolar and first molar. We can then adjust the premolar distally through the use of auxiliary springs.

In Class II, Division 1 cases, by using a labial extension coming between the premolars and canines, the maxillary anteriors can be retruded when necessary.

In certain distal occlusion cases, the mandible is in correct relation to the face and cranium, but the maxillary molars are mesial in relation to the mandibular molars. Correction of the case depends upon driving the maxillary first molars distally.

The need of driving the maxillary first molars distally in this type of case, together with the methods of doing it, were first presented by me before this society in 1931. At that time the procedure was considered so revolutionary that it evoked considerable discussion and not a little criticism. Since that time, the pendulum has swung too far in the other direction, with the result that, in my opinion, too many cases are incorrectly diagnosed and this method of treatment is used without the necessary fine discrimination.

The moving of the maxillary first molars distally is accomplished in one of three ways. In the first method, a tight-fitting lingual arch is used on the mandible. It rests in contact with all mandibular anterior teeth. A maxillary labial arch fitted exactly to the maxilla is used at the same time with intermaxillary elastics. The maxillary labial arch is pulled out anterior to the tubes and a stop is soldered so that all the force of the intermaxillary elastics is on the first molars. This causes them to move distally. With this method, which may be used on one or both sides, a space is created between the maxillary second premolar and the maxillary first molar.

After sufficient distal movement of the maxillary molars has been accomplished, a lingual arch is placed on the maxilla, and with loop springs the premolars are brought back into contact with the molars. This method has worked very satisfactorily. Sometimes a slight amount of tipping of the maxillary first molars occurs. This must be corrected with the lingual arch. The above is the method I described in my presentation in 1931.

Fig. 31 shows a case treated in the above described manner.

Fig. 32 shows the occlusal view of this case at the start and after considerable progress had been made.

Fig. 33 shows a side view of this case.

Fig. 34 shows an occlusal view of the maxilla with the appliance in place.

The second method is the use of intermaxillary elastics from a maxillary to a mandibular lingual arch. Care must be taken to see that the adjustment of the arch is such that it can carry the molar teeth distally. There is far less tipping when intermaxillary elastics are used from lingual to lingual arch than from lingual to labial arch because there is less cuspal interference.

There are three variations of unilateral distal occlusion cases. In the first, the mandibular first molar is distal on one side and needs to be moved mesially. Treatment consists of a maxillary labial arch with a band on the maxillary first molar and intermaxillary elastics on the side of the distal occlusion.

Fig. 35 shows such a case with appliances in place.

Fig. 36 shows the anterior view of the same case.

The new method which I have developed and which we prefer today is the use of a maxillary lingual arch with intermaxillary elastics fastened to a

Fig. 31.

Fig. 32.

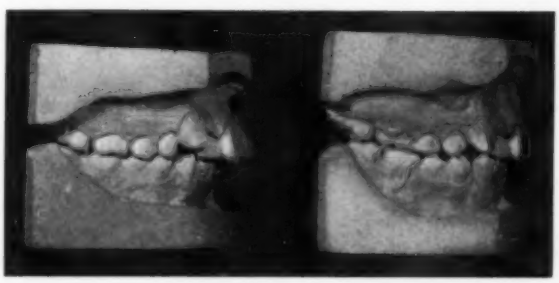

Fig. 33.

Fig. 34.

hook on the lingual surface of the mandibular molar band. We prefer this to intermaxillary elastics fastened to a labial arch because it is more efficient, due to less cuspal interference. There is also much less rotation.

Fig. 35.

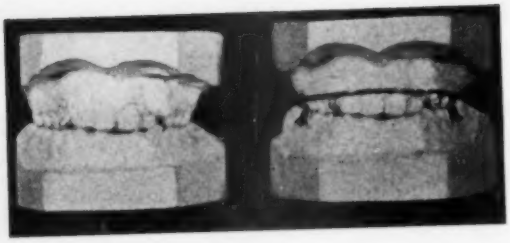

Fig. 36.

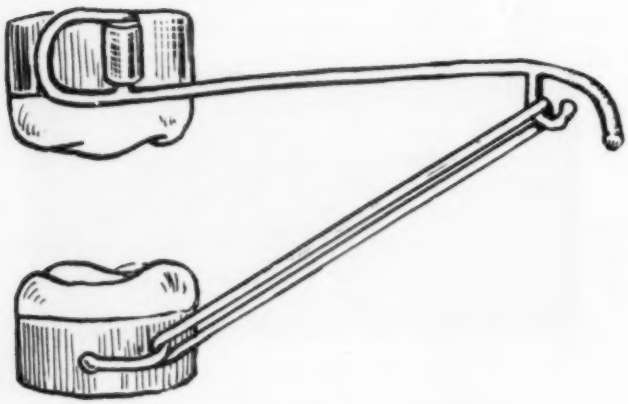

Fig. 37.

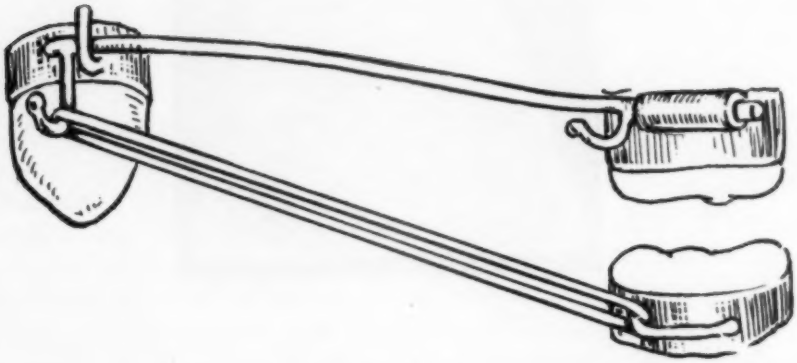

Fig. 38.

This appliance is shown in Fig. 37.

The third method is called the half-arch technique. This is especially advantageous when the mesial relation of the maxilla is on one side only. The maxillary first molar is banded with a buccal tube soldered in the usual position. The maxillary canine is banded with a loop attached to the band.

Fig. 39.

Fig. 40.

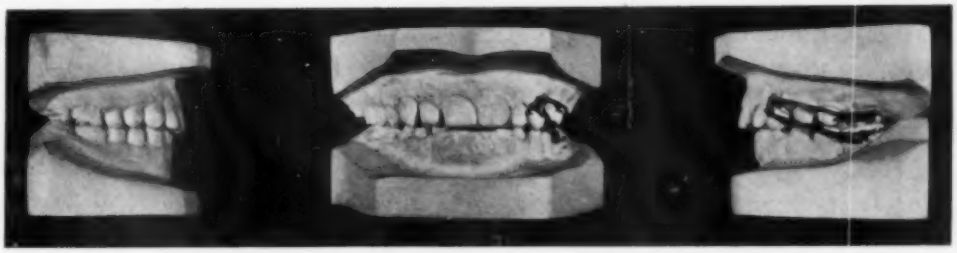

Fig. 41.

Fig. 42.

Fig. 38 shows a line drawing of this appliance.

A half arch is extended from canine to molar. If the molar is to be moved distally, individually, the stop is soldered anterior to the attachment on the canine band. This permits the full force of the intermaxillary elastics to fall on the molar. If we wish to carry the canine, premolars, and molars all dis-

tally, the stop is soldered in contact with the loop on the canine band, thus giving a mass tooth movement distally. Intermaxillary elastics are worn from the lower molar band to a hook as far anterior as it is expedient to place it.

Fig. 39 shows models of a case which came to us in May, 1942. There was normal relationship of premolars and molars on the right side. On the left, all teeth in the maxilla were completely buccal to those of the mandible. The mandibular premolars and molars were biting on the gingiva and were lingual to the maxillary premolars and molars.

Treatment was started with a mandibular lingual arch with a round tube on the left side and the regular half-round tube on the right side. We find, in cases in which we wish to carry teeth into occlusion, that a horizontal round tube is very satisfactory.

The maxillary left molar was banded, and intermaxillary elastics were worn from the mandibular lingual arch to a hook on the buccal side of the maxillary molar band. This was done until we had the proper occlusion of the molars. Then a recurved lower spring was placed on the left side in order to bring the premolars into occlusion.

Fig. 40 shows the result of this primary treatment in which the teeth are in occlusion but in which there is a unilateral distal occlusion of the left with a slight protrusion of the canine. To treat this condition, a mandibular molar band was placed with a hook on the buccal side and a labial half arch on the maxilla. This was ten months after the primary treatment. In the interval between the eighth and tenth months there were no appliances in the mouth.

Fig. 41 shows a labial half arch in place and the correction of the distal occlusion in five months' time.

Fig. 42 shows the case after appliances were removed at the end of fifteen months.

In presenting this paper, the purpose has been to show treatment of complicated cases involving extensive tooth movement with a minimum of appliances. We feel very strongly that the placing of appliances in excess of those absolutely necessary for the accomplishment of results is contraindicated, because the less foreign material there is in the oral cavity, the less possibility there is of doing harm to the oral tissues through orthodontic treatment. It is hoped that this presentation has shown the value of simplicity in appliance design.

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1520 SPRUCE STREET

TREATMENT OF A CASE USING THE JOHNSON TWIN-ARCH TECHNIQUE

WILBUR J. PREZZANO, B.S., D.D.S., WHITE PLAINS, N. Y.

THIS case was chosen for presentation, not because the result, in itself, was singled out as spectacular, but simply as a demonstration of the typical functioning and employment of the Johnson twin-arch technique.

The patient, who presented herself for examination and consultation on Sept. 23, 1942, was a 15-year-old girl who weighed 96 pounds and was 5 feet 1 inch in height. Her general appearance, manner, intelligence, and posture seemed quite normal, except for her rather frail physical structure. Her birth had been normal and her health as an infant quite good. As a young child she had suffered from measles, mumps, chicken pox, and rheumatic fever. There was also a history of repeated colds and persistent seasonal hay fever. She had undergone an operation for the removal of tonsils and adenoids at the age of 7 years. There was a history of somewhat the same type of malocclusion on the maternal side. Her present diet, although well rounded, was slightly deficient in quantity. There was no history of contributory habits, with the exception of the possibility of mouth breathing. The head form was dolichocephalic and the facial type, leptoprosopic. The facial muscle tonicity was rather poor, and the labial musculature was fair.

The oral examination revealed a case that appeared to be a combination of a maxillary protraction and a mandibular retraction with labial tipping of the maxillary lateral incisors and very slight lingual tipping of the maxillary central incisors. In the Angle classification, we should probably place it under the heading of Class II, Division 2. The color of the membranes of the mouth was a healthy pink, and the condition of the gingivae was normal. There was no evidence of difficulty in swallowing, opening and closing the mouth, or speech. The teeth were tapering in shape, average size, and there was no dental caries present. The enamel was of good, translucent character.

X-rays and impressions for study models were then taken, which can be seen in Figs. 1 to 7. Fig. 1 shows original models, front view; Fig. 2, left side; Fig. 3, right side. Fig. 4 shows x-ray of the anteriors, and Fig. 5 of the posteriors. Fig. 6 shows lateral jaw plate, left side; and Fig. 7, lateral jaw plate, right side. The x-rays revealed the presence and unfavorable position of the third molars.

The plan of initial appliance therapy was to band the upper first molars and place a cut-back lingual appliance of the Mershon type, coming across the palate in the region of the mesial of the premolars, with springs for expansion of the canines and premolars. Thirty-six thousandths buccal tubes were to be placed for the use of a twin-arch labial appliance. Johnson type anterior bands were

Read before the meeting of the New York Society of Orthodontists, Nov. 9, 1943.

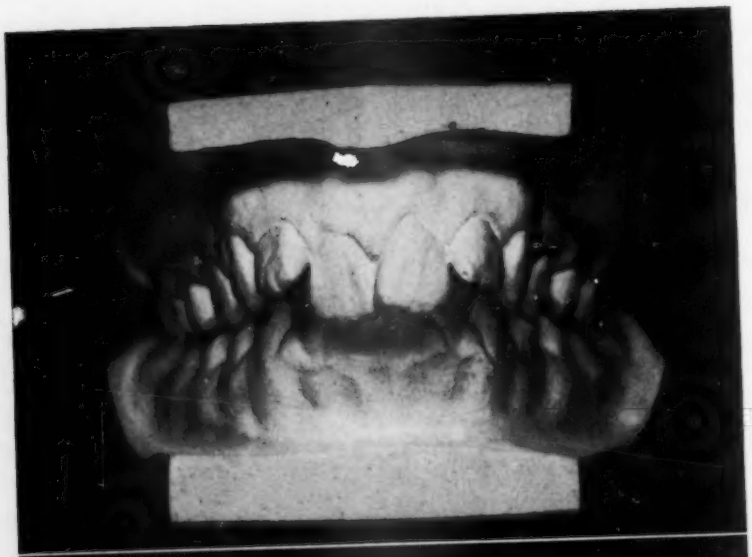


Fig. 1.

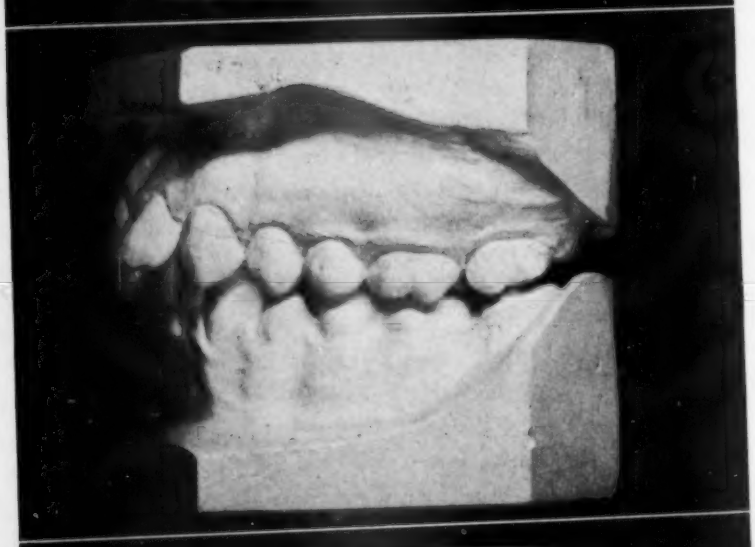


Fig. 2.

Fig. 3.

to be placed on the four incisors. The lower first molars were also to be banded and a Mershon lingual appliance placed on them, with springs for expansion. Thirty-six thousandths buccal tubes were to be placed for the possible use of a lower twin-arch labial appliance, and also to serve as hooks for intermaxillary elastics. The prognosis seemed quite good, and the length of time for active treatment was estimated at approximately one and one-half years.

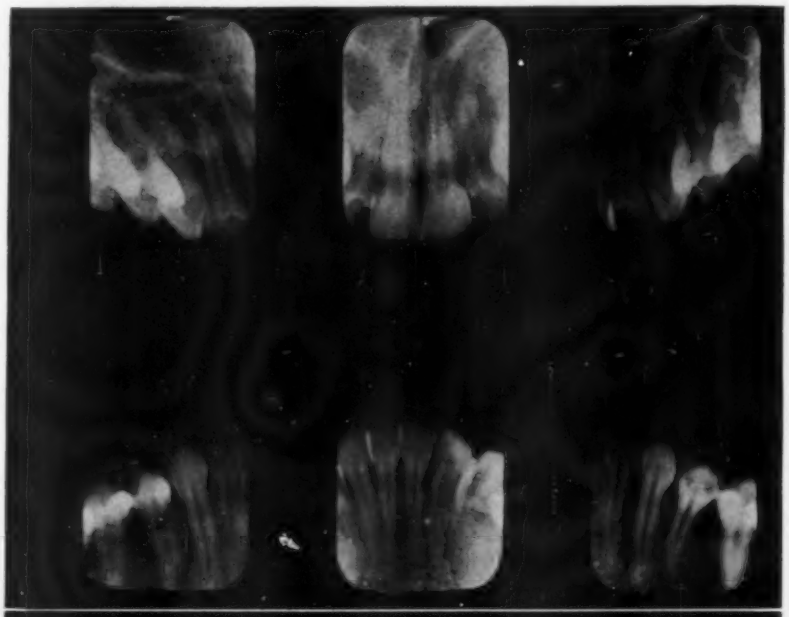


Fig. 4.

Fig. 5.

Molar bands were constructed by the indirect method and the lingual appliances fitted. The maxillary bands were cemented and the appliance inserted on Oct. 21, 1942, and the mandibular appliance was placed on Nov. 25,

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

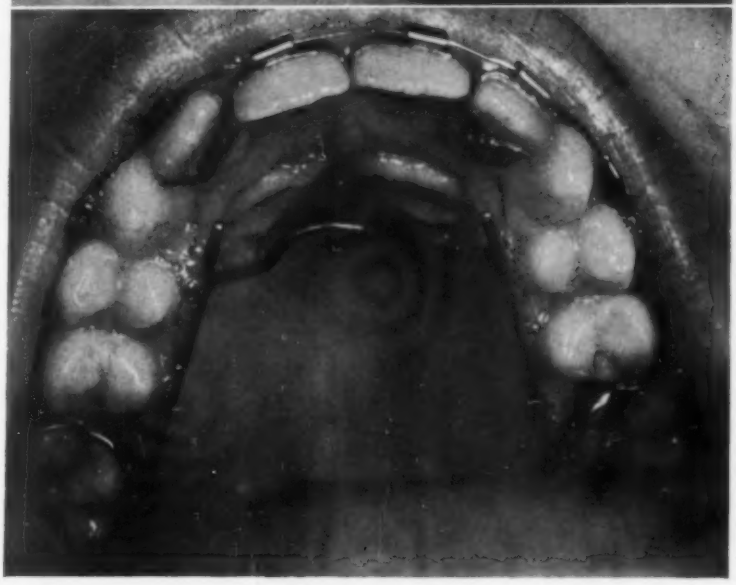


Fig. 10.

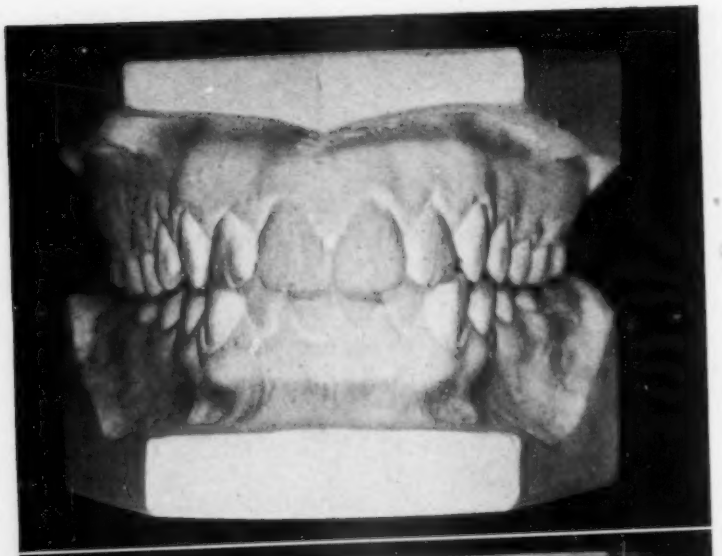


Fig. 11.

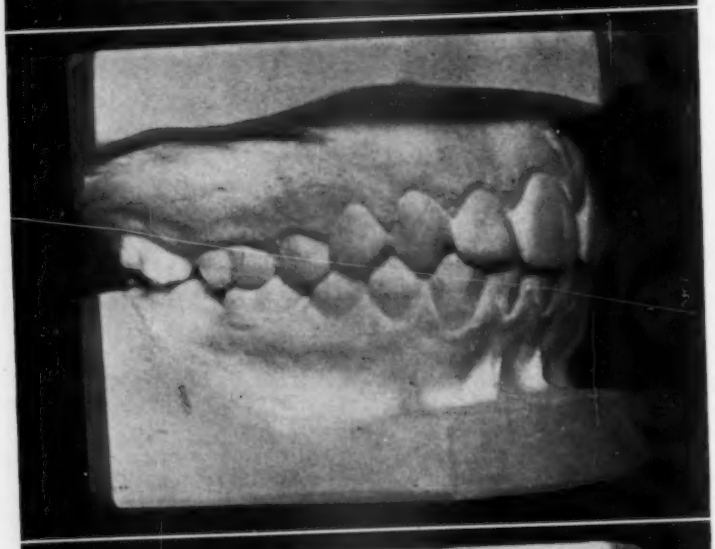


Fig. 12.

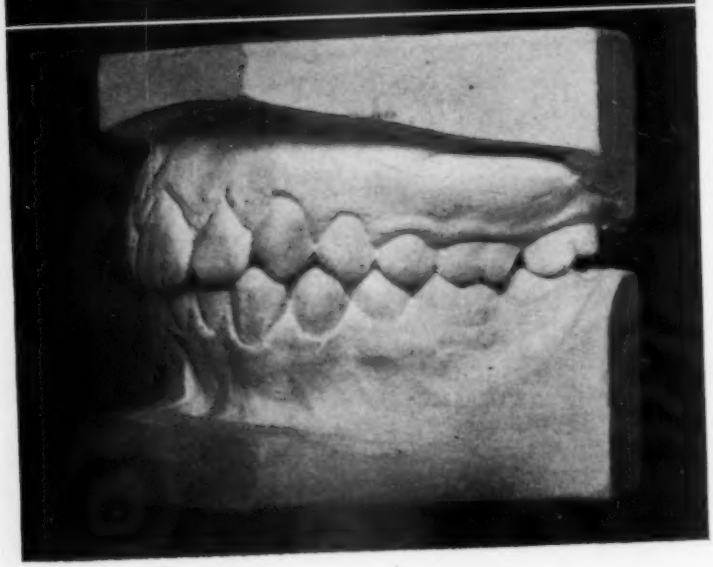


Fig. 13.

1942. The patient visited the office for adjustments on the average of every two weeks. By Feb. 24, 1943, an amount of expansion had been established that brought the maxillary canines and premolars far enough away from the lingual appliance as to render the auxiliary springs rather unprotected and to hazard the stability of the lingual appliance. The maxillary molar bands were therefore removed, and an impression was taken to reshape the appliance, which was replaced two days later. On March 24, 1943, Johnson bands were placed on the four maxillary incisors, and the 0.010 single wire section of a twin-wire arch was engaged in the brackets with slight crimping of the wire. This last step would have been accomplished slightly sooner had it not been for a short intervening illness of the patient. One week later a regular twin arch was placed, and the use of medium-sized intermaxillary elastics was instituted. It was definitely established that the end tubes could slide freely through the buccal tubes. On May 12, 1943, the mandibular molar bands, which had been on for almost six months, were removed and recemented, at which time a mandibular twin arch was placed, ligating the incisors to it.

Fig. 14.

The treatment then proceeded uneventfully with the continued use of intermaxillary elastics, the patient making visits at intervals of two weeks. Adjustments were made on the springs for expansion; slight molar rotating pressure was applied by means of the lingual appliance, and new twin-arch labial appliances were placed whenever required. By Aug. 28, 1943, the usual compression of the tissue and consequent slight intrusion of the premolars and canines had been accomplished. I believe that this is quite well demonstrated in the next two illustrations. Fig. 8 shows the left side. Here we see the effect of the tissue compression in the form of intrusion of particularly the canine and first premolar. Fig. 9 shows the same effect on the other side. The next illustration, Fig. 10, shows the lingual appliance in place at this stage. This

is, of course, as I pointed out before, the second maxillary lingual appliance, the first having established the initial expansion. I believe that if I had used stabilizers in the interproximal space between the canine and first premolar on either side, the necessity for changing this appliance might have been averted.

Fig. 15.

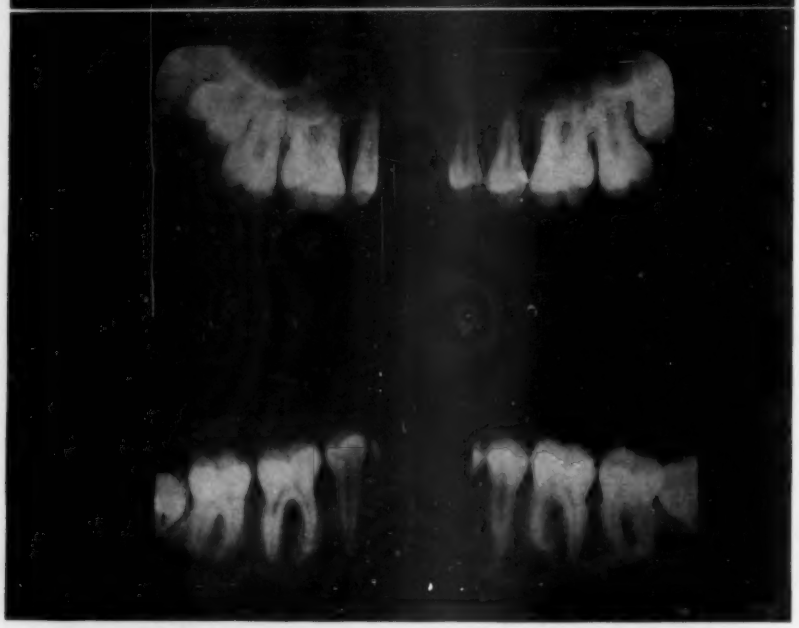


Fig. 16.

Shortly after this, the maxillary lingual appliance was removed, and posterior coil springs were placed on the maxillary twin-arch labial appliance. Intermaxillary elastics were continued for posterior movement of the molars. On Oct. 5, 1943, a little more than eleven months after active treatment had been instituted, a maxillary acrylic retainer of the Hawley type was placed.

Fig. 17.

Fig. 18.

Photographs of the models taken at this time show front view (Fig. 11), right side (Fig. 12), left side (Fig. 13). The next illustration (Fig. 14) is a photograph of the teeth taken at this time.

Figs. 15, 16, 17, and 18 are x-rays taken after the appliances were removed.

The recommendation has been made that all four third molars be removed. The patient has been instructed to do temporomasseteric exercises with the retainer in place.

The actual mechanical construction of the type of appliance used in this case has been so thoroughly described in the literature as to render repetitious any remarks I might make in this regard. However, there were a few principles involved that may be of some interest. It is noted that the use of elastics was started almost immediately after the placing of the twin-arch labial appliance. This is particularly important in the treatment of Class II, Division 2 type cases, in order to avoid the possible anterior movement of the central incisors that may result from the automatic alignment of the banded incisors. This point was brought out by Dr. Ashley Howes at our last meeting.

Another factor of interest is the slight molar rotating pressure applied to the maxillary lingual appliance. As the mesial of each molar was rotated buccally, the end tube coming out of the buccal tube naturally tended to move away from the premolars and canine. The flexibility of the anterior section of the arch permits this movement. Therefore, the possibility of interference in expansion is lessened. Dr. James McCoy is a firm believer in the necessity for slight buccal rotation of the mesial portion of molars, particularly in the finishing of cases.

I also spoke of the tissue compression of the canine and premolar areas that takes place with the use of elastics during the stage in which the end tube can pass freely through the buccal tube; that is, before placing the posterior coil spring. This crowding of the tissue causes a posterior pressure against the molars. When the coil spring is then placed, with the continued use of Class II elastics, the posterior movement of the molar is facilitated, and, as the molar moves back, the tendency is to relieve the tissue compression and allow the premolars to drop into place. This is certainly among the most vitally important of the principles of the Johnson technique.

I wish to express my gratitude to Dr. Johnson, and to the other men who have become adherents to his methods, for what they have taught us and for the aid they have given me in the preparation of this report.

MEDICAL CENTER

A NEW METHOD OF TREATING UNILATERAL POSTERIOR OCCLUSION, CLASS II, DIVISION 1, SUBDIVISION

JOSEPHINE M. ABELSON, D.D.S., NEW YORK, N. Y.

HISTORY.—The patient was a healthy boy, 13 years of age, who presented a malocclusion (Fig. 1) with a noticeable lack of the vertical dimension of the lower one-third of the face, with mild asymmetry indicated by slight fullness of the right side and the suggestion of a drawn appearance on the left. Early childhood diseases were measles, chicken pox, and whooping cough. He was subject to the habitual practice of resting his fist against the mandible on the left side when reading or studying. The exchange of his early dentition was tardy, with a premature loss of his deciduous molars. He was fortified by a calcium and phosphorus-supporting diet and cod-liver oil, in an effort to overcome a rachitic tendency. While there is no acknowledged history of thumb-sucking, he was bottle-fed, and mollified as an infant with pacifiers.

Fig. 1.—Front view and profile before treatment.

Attributed Etiology.—The combination of the foregoing factors in the early history, rather than one individual factor, would be a more rational explanation of the problematical etiology. The postural habit having its effect on a plastic anlage, in conjunction with the premature loss of the deciduous molars without their supporting successors, might be the most significant of these environmental factors to have produced a deviation of the midline and an attendant abnormal intercuspation, which in turn, produced a posterior relation of the teeth on

Read before the New York Society of Orthodontists, Nov. 9, 1943.

the right side with an almost normal cusp relation on the left (Fig. 2). The protrusion of the mandibular incisors indicated a forward positioning of the teeth off the basal bone.

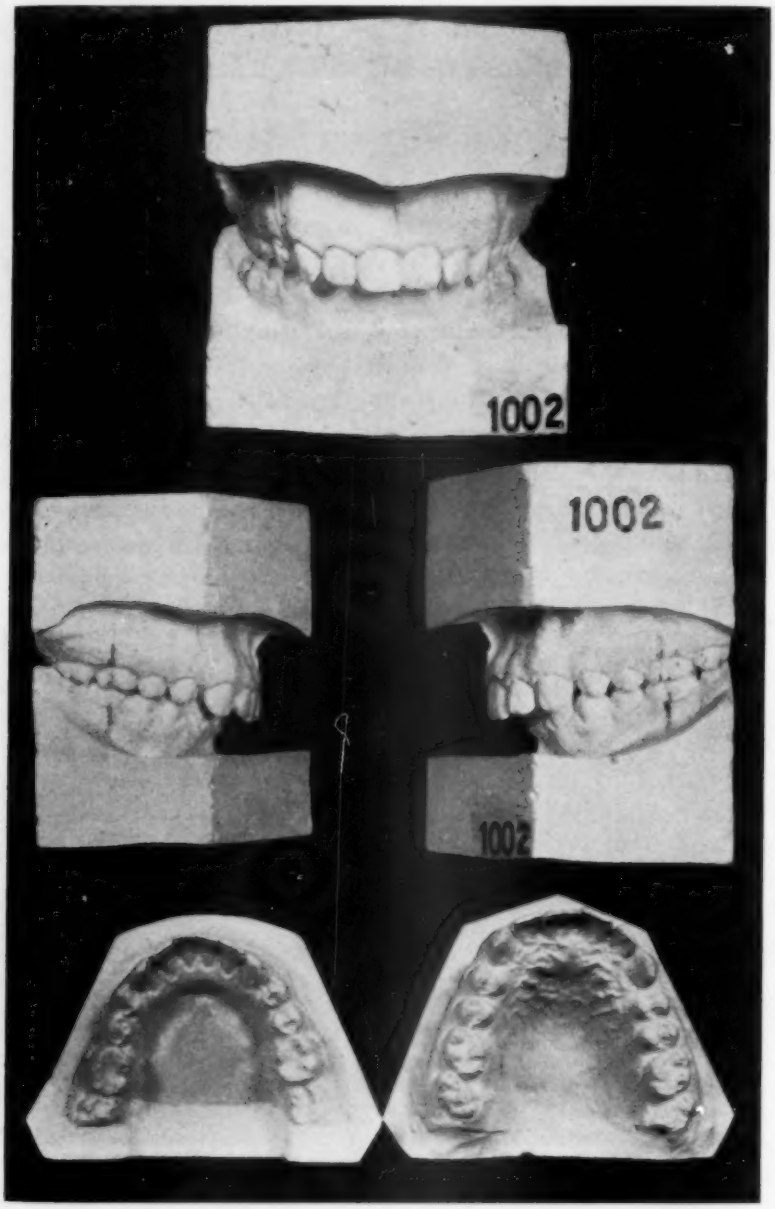
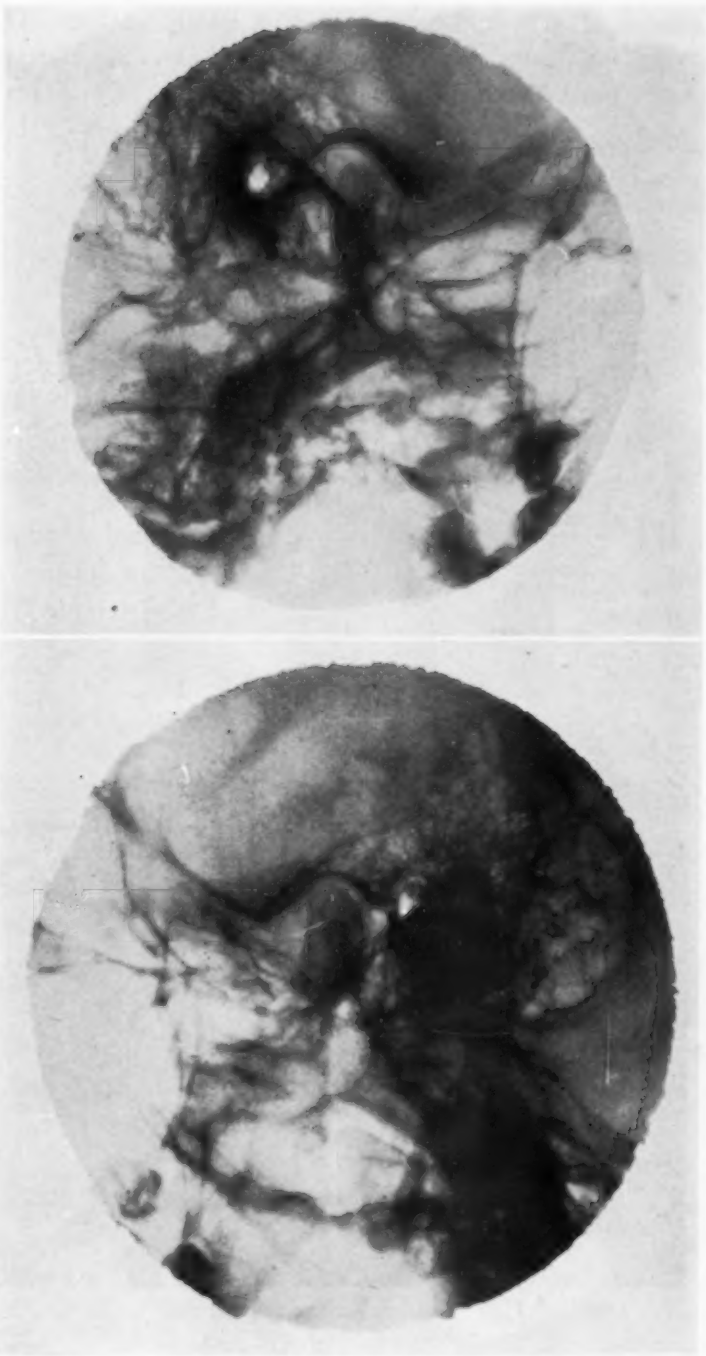


Fig. 2.—Front side, and occlusal views of models before treatment.

Diagnosis.—Extraoral roentgenographic examination of the temporomandibular joints revealed an abnormal displacement of both condyle heads in the mandibular fossae (Fig. 3, *A* and *B*). This important diagnostic aid pointed out that the clinical appraisal of a Class II, Division 1, Subdivision, or a unilateral posterior occlusion, was more the result of a rotated mandible, rather than the forward migration of the maxillary teeth of the right side and an underdevelopment of the alveolar process that was host to the mandibular teeth. The



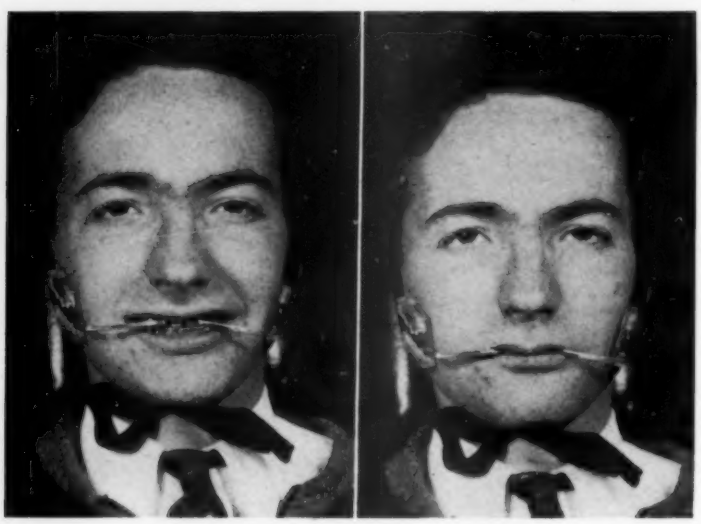
A.

B.

Fig. 3.—*A*, Lateral view of left condyle showing forward positioning in the mandibular fossa and reconstructive changes in the head and neck.
B, Posterior position of right condyle in mandibular fossa.

even alignment of the maxillary teeth, and the normal approximal contact of these teeth with their unperverted axial relation, indicated that if there was any forward displacement, it would have been of a bodily nature. The important differentiation in the approach of treatment in a case of this type is the investigation of the position of the mandibular condyles which reveals a rotation

A.



B. *C.*

Fig. 4.—*A*, Skeletal formed head cap, with occipital support recommended by Dr. H. Bull, employing the traction jig of his design.
***B*, Position of traction hooks attached to appliance.**
***C*, Ease of accommodation of lips while wearing appliance.**

of the mandible or a forward translation of the maxillary teeth. All cases of unilateral distoclusion do not, however, fall under the heading of a rotated mandible and cannot be treated under the following new approach. Let me

emphasize that only cases revealed by roentgenographic examination of the temporomandibular joints to show rotation will be amenable to the recommended procedure.

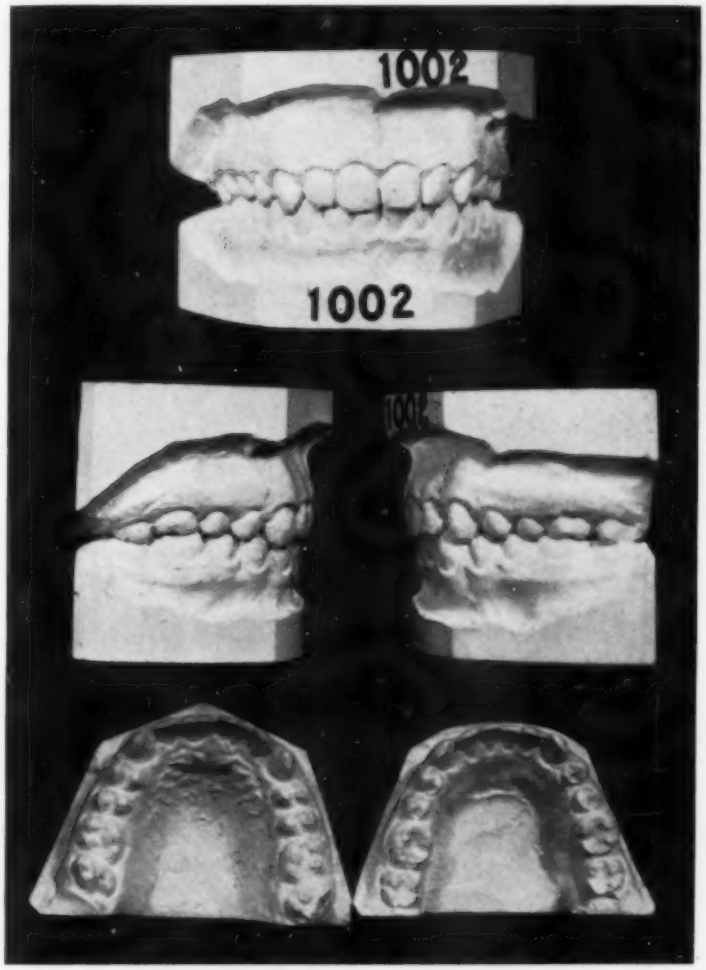
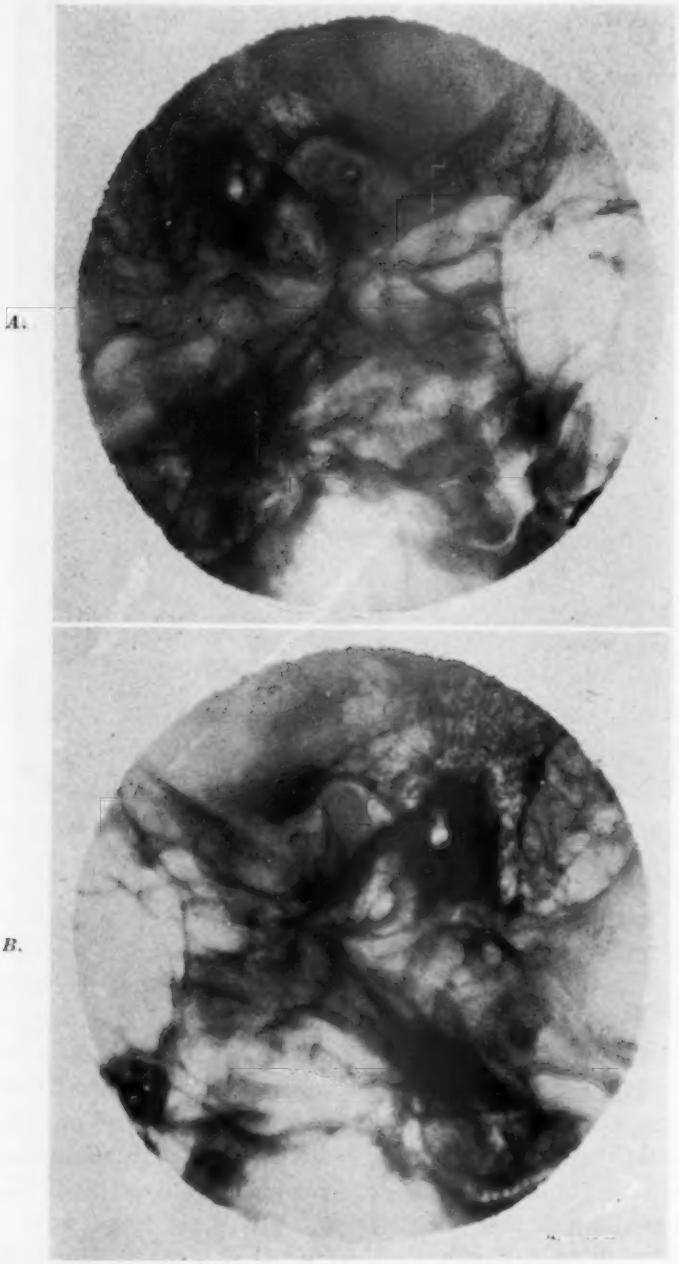


Fig. 5.—Front, side, and occlusal views of models after treatment.

Treatment Therapy Employed.—Following the recommended therapy of Dr. Charles H. Tweed of preparing anchorage by placing the teeth over the basal bone, a full edgewise assembly was placed, with anchorage established on the first molars because of a sounder tooth structure. First, dynamic stationary anchorage was prepared in the mandibular denture. The buccal teeth were tipped distally and in lingual axial inclination. The mandibular incisors were uprighted after bracket engagement was secured by placing a 0.016 inch round arch. This was succeeded by 0.018 inch and 0.020 inch arches before the edgewise arch of 0.0215 by 0.025 inch was seated. Incorporated in the latter were tip-back bends, and coordinated lingual torque that correlated the amount of tip back force activating the buccal teeth. Small tie loops were incorporated in the edgewise arch to rest against the buccal sheaths on the molar bands, to act as stops. The head cap was employed, with occipital anchorage as the tractional force to properly activate the tip back bends. Intermaxillary hooks

were soldered to the maxillary arch in the region of the canines as well as to the mandibular arch on the left side, in the canine region also. A head cap was employed during the night, as a means of driving the *left maxillary* buccal segment posteriorly from the canine to the second molar. A heavy elastic of 8 ounce pressure was employed on the left side in conjunction with light intermaxillary Class II elastic carrying 5 ounces on the right side, during the daytime. This was worn from the maxillary canines to the mandibular first molars. The chief driving force, however, was obtained from the occipital anchorage



A.

B.

Fig. 6.—*A*, Lateral projections of left condyle showing distally moved position in the mandibular fossa and altered contour as a result of function.
***B*, Right side showing forward positioning as a result of shift of entire mandible.**

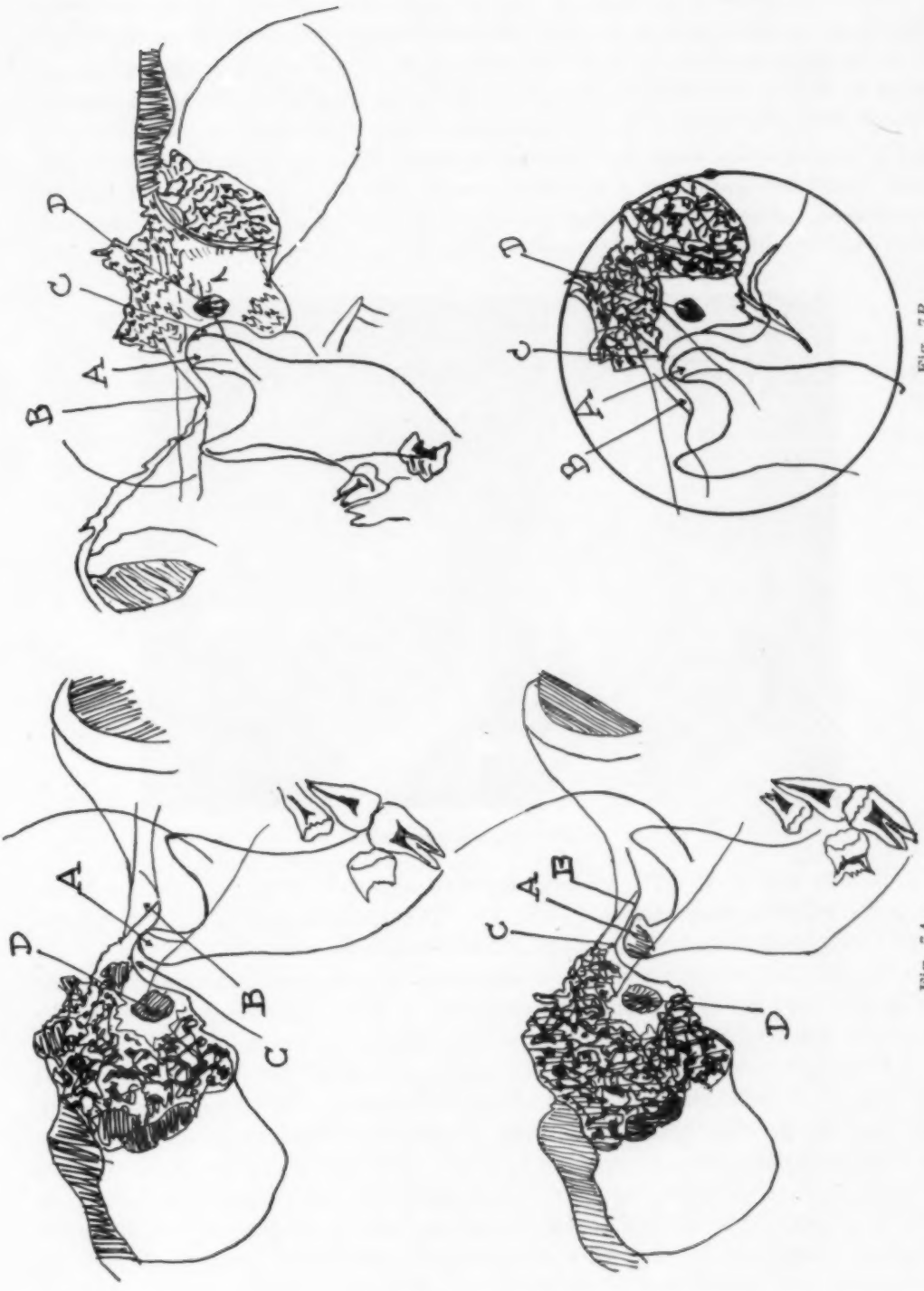


Fig. 7A.

Fig. 7B.

Fig. 7A and 7B.—*A*, Condyle head; *B*, articular eminence; *C*, mandibular fossa; *D*, earhole (external and internal auditory meatuses).

head cap that employed the ingenious device developed by Dr. Harry Bull. It consisted of a plastic slotted jig carrying a sliding arm that was vitalized by elastic traction (Fig. 4, *A*, *B*, and *C*). The comfort and efficiency of this device, as compared with other head cap attachments, particularly recommended it. A mesial cusp relation of the left side was achieved, which prepared the way for the proper reception of the teeth when the mandible was to be rotated. The particularly efficient arrangement of Class II elastics on the right side, and Class III elastics on the left side, as recommended by Dr. Charles Tweed, were then employed, and a complete rotation of the entire mandible was accomplished. Everything was prepared to receive this mandibular rotation; otherwise, the shifted mandible condyles would not hold.

Fig. 8.—After treatment.

Results Achieved.—The unilateral posterior cusp relation was corrected into properly related cuspal contact (Fig. 5). The teeth of both jaws were placed over their basal bone and the normal anteroposterior relation achieved by the rotation of the entire mandible as indicated by the roentgenographic survey (Fig. 6, *A* and *B*) of the temporomandibular joints. This was prepared by the posterior movement of the seemingly normal maxillary buccal segment (Fig. 7).

Prognosis.—As recognized in the latest edition of Dr. Strang's excellent "Textbook of Orthodontia," return of the displaced condyle may be encountered, particularly in older individuals, and sometimes treatment is unsatisfactory and disappointing when attempting to rotate the mandible in treatment of cases of malocclusion that warrant a repositioning of the temporomandibular joints. This possibility is minimized if the precaution is taken of determining abnormal condylar positions by x-raying the temporomandibular joints. When the maxillary arch is prepared to receive the mandibular rotation, the prognosis of a stabile and satisfying jaw relation is very favorable.

Observations and Conclusions.—In attempting a correction of a type of malocclusion that has proved difficult and unstable, a new approach is offered

that holds a promise of enduring and stabile results. This is considered possible because previous unsuccessful therapy of Class II, Division 1, Subdivision cases, attempted to make the correction either in the mandible or maxilla of the so-called abnormal side. A more complete investigation in the survey of abnormal conditions of the case, by employing the little used practice of radiographing the positions of the temporomandibular joints, reveals abnormal condylar relations that indicate a rotation of the mandible. Severe and destructive sequelae result to the condyle heads and fossae as a result of this malocclusion of the joints. This recommends a return to normal relations, both as a healing procedure and as a more enduring and stabile result of treatment, because it is the logical and correct one. Malocclusions of this type, and subdivision that do not exhibit a rotated mandible as revealed on adequate roentgenograms of the temporomandibular joints, should *not* be treated according to the aforementioned approach since it will introduce a conflicting environment to the joints that will prove painful and unstabile. This is a plea for employing a more thorough investigation of cases by utilizing all available adjuncts in diagnosis. If we combine this with the sound principles of Dr. Charles Tweed in preparing our dentures to resist collapse by placing them over basal bone, we can hope to achieve the comforting objective that seems to be the keynote of the meeting—"stability in the treated denture."

136 East 36th Street

DIET AND THE TEETH

KENNETH A. EASLICK, A.M., D.D.S.,* ANN ARBOR, MICH.

AT LEAST once a week the mother of a preschool or school child comes to my office *angry*. If I hear the reception room door slam, I prepare myself for a terrific tongue-lashing. All of these mothers seem to say the same thing: "See here, all during my childbearing period I followed the advice of a physician. I ate what I was told to eat, and I followed directions in regard to sleep, rest, and exercise. I had appointments with the dentist three different times during that period.

"Three months after my daughter was born she was placed under the care of a pediatrician. I know that she has had all of the things that were good for her, all of her life. Ever since she has been old enough, she has had four glasses of milk a day, she has had a big glass of orange juice every morning when we can get oranges, she has had an abundance of green leafy vegetables, she likes and eats fresh fruits, she eats whole-grain cereals and whole-wheat bread, and she has had a teaspoonful of cod-liver oil every day of her life.

"But when you examined my daughter last week, you found ten cavities in her teeth. Now, I want to know, why?"

Having been confronted with this same question so many times from the younger mothers in my practice, I plan to use the time that has been allotted to me today for a talk to young parents. Usually I ask the mother this question, "Does your daughter eat sweets?" And usually she replies, "She eats very little. We have simple desserts like custards; she gets a little sugar in her fruit juice; she has a little sugar on her cereal; and she doesn't eat nearly so much candy as other children in the neighborhood—once or twice a day perhaps, always after a meal. When we have sweets, we have the natural sugars like jelly, jam, maple syrup, or honey."

Then I ask some more questions "Does your daughter chew gum?" Usually I get the answer, "Yes, she likes gum and chews it every day. We think gum is much better for her, you see, than candy." I remind mother that a stick of gum has about a half-teaspoonful of sugar in it, and it is held in contact with the teeth until every last bit of sweetness is extracted.

Then I ask, "Does she like pop or other soft drinks?" Usually the reply comes, "Yes she likes orange, or root beer, or some other flavor." Again I remind mother that some of these soft drinks have in them the equivalent of a tablespoonful of sugar per bottle.

I again ask, "Does she like chocolate milk?" Frequently I get the answer, "Well, we had some trouble with her about milk, but she likes milk when it has chocolate in it and she drinks it readily." Once more I remind mother that chocolate milk is sweetened milk.

Radio address over Station WSM, Nashville, Tenn., Nov. 23, 1943, during meeting of Tennessee State Dental Association.

*Associate Professor of Operative and Public Health Dentistry, University of Michigan.

I may ask, "Do you have much canned fruit in the winter months?" Almost always I get the reply, "Yes, we like canned fruit." I then have to recall the thick syrup that is on most canned fruit.

I probably conclude with a question about white flour to find out about the amount of refined starches in the diet. I find that white flour is used in variable amounts. Some families eat white bread; some children nibble at crackers frequently; many families like hot biscuits; many families like heavy pastry desserts; and in some households grandmother still keeps the cookie jar well-stocked. Where white flour *is* consumed, I have to point out that refined flour has lost its minerals with the husk and germinal portion of the wheat, and it consists, therefore, of almost pure, finely-milled starch. Refined starch is readily broken down to sugar by a child's saliva.

This bit of detective work, to search out the sugar in the family diet, is not an attempt to put mother on the defensive—not at all. It does show the many ways in which sugar insinuates itself into the usual American family diet. Back in Paul Revere's time (Paul Revere, you know, was one of the earliest American dentists!), almost no pure sugar was consumed, and there was very little need for dentistry. Figures indicate that the last year before rationing about one hundred seventeen pounds of sugar per person were consumed in the United States. At the same time less than five young adults per hundred had escaped decayed teeth.

The Alaskan Eskimos have been used frequently in times past as an example of a primitive people who have had unusually fine teeth. In spite of a poor diet, one which was almost entirely fat and protein, animal or fish, the Eskimo people still had good teeth. Some dietary research workers have even suggested that we Americans "'go native' and get good teeth." Times have changed in Alaska. Missions, schools, trading-posts, and army camps have moved into that big country, and the Eskimo children in the white man's area now have terribly decayed teeth. Eskimo parents barter their skins and their baskets at the trading posts for granulated sugar, white flour, and molasses principally, all refined carbohydrates.

There is a foundling institution in the State of Ohio in which children are reared in cottages on a large farm. Years ago when tooth decay was studied scientifically for the first time, the diet of these children was found to be below normal for maximum physical development of children's bodies. These children averaged about one glass of milk per day; they were served fresh fruit and vegetables only in the summer season when such products were raised on the farm; they received one orange a year (at Christmas time); they received cod-liver oil only if they came there with active rickets; *but* they received *no sugar*. The 65-year-old director of this institution had learned from his grandmother when he was small that sugar was bad for the teeth, so sugar, pastry, and candy were absolutely prohibited inside of the institution. In spite of their deficient diet, children in the various cottages had very little tooth decay. Eight to 13 per cent of them had cavities as compared to 95 per cent of the school children in the town one mile down the road.

The diet in this institution has been corrected, of course, with the advent of newer knowledge of nutrition, but sugar still is excluded, and the amount of tooth decay still is remarkably low.

As one reviews such evidence, he begins to suspect that great-grandmother was right, that sweets do have something to do with tooth decay.

Dentists a long time ago coined a slogan, "A Clean Tooth Never Decays," but dentists had to take that one back. It was found impossible to keep teeth clean in bacteria-infected mouths. At the tight contacts between the sides of the adjacent teeth and in the depressions on the chewing surfaces of the molar teeth, a tooth brush was found to be ineffective.

Later, dentists said, "A Clean, Well-Fed Tooth Never Decays," but mothers bring children to the dentist constantly with well-fed teeth that *have* decayed. Perhaps dentists will agree eventually with great-grandmother, "A Sweet Tooth Is the One That Decays."

But *sugar* is not the entire story; a few people, here and there, never have tooth decay, regardless of the amount of sugar that they eat and regardless of of the infrequency of brushing. If we accept the best accredited research which comes from the laboratories in dental schools and research institutes where tooth decay is studied scientifically, bacteria have to accompany the sugar. Tooth decay is not a mere rotting process which goes on around stagnant teeth; it is the result of an invasion of the mouth by a special kind of bacteria. These bacteria live on sugars and fine starches. Under the microscope, they appear as small, rodlike organisms, very similar to the ones that sour milk. When such bacteria contaminate milk, they grow on the milk sugar which it contains (its sugar is called lactose), and they produce lactic acid. The acid sours and curdles the milk. In the mouth, this same acid dissolves the minerals from the teeth and starts cavities.

Still the picture of tooth decay is not complete. Human saliva itself is generally neither acid nor alkaline; it stays at just about the neutral point between these two conditions. Why, then, does not the neutral saliva wash away the bacterial acid? The reason is that everyone appears to have a film in his mouth, a tough film (probably of mucin from his saliva). It forms in sheltered places on his teeth. Under such a shelter the lactobacillus can live on the sugar which its host eats; it can multiply and then produce so much acid that it kills off other bacteria which cannot withstand acid. Eventually the acid becomes concentrated enough under the film to dissolve the minerals out of tooth enamel. A cavity begins. Once a spot is broken down, other bacteria (and there are millions of bacteria constantly in one's mouth) can get into this cavity and destroy the living portion of the tooth.

Bacteria, like human beings, will starve to death without food. We have, then a new way to combat tooth decay—starvation. We can starve the lactobacilli, or reduce their numbers to a point where they are no longer harmful, just by the elimination of sweets.

When we attempt to do so, however, we immediately run into a well-established but bad American habit, an appetite for sugar. Furthermore we run against this objection, "I must have sugar; it is a fuel food and I need it for energy and quick-starting."

Well, it does take fortitude and cooperation to break the desire for sweets. Parents, a dietician, and the family physician may have to cooperate to alter eating habits. An alteration of habits, however, is by no means impossible if one *honestly* prefers to watch his diet *for the prevention* of cavities to a visit to the dentist *to fill* cavities.

The mistaken notion is frequent, even among health workers, that "Children need concentrated sugar foods for energy." Balance studies in diet therapy clinics, however, have proved that this notion, too, is false. Children, like automobiles, do not require "ethyl" carbohydrates for quick-starting; they can get along on "regular" carbohydrates splendidly. Starting with a basic diet which has almost no sugar and very little starch in it, the acid-forming bacteria in a person's mouth can be reduced drastically in two weeks. At the end of that period four glasses of milk per day may be added, whole-wheat bread each meal, and potatoes for two meals; then any child or adult will have an abundance of starch and sugar for all energy demands. Balance studies have demonstrated the statement to be a fact that "The starches in the primitive American-Indian diet are ample for all energy."

For the last six years I have watched low-sugar diets stop cavities for entire families in my own practice. One family has been unusually well pleased. After the initial cold plunge with such a diet, the two small daughters and father and mother all found that they soon lost their appetite for sugar. The little girls were pleased because they had no further cavities (going to the dentist to get one's teeth cleaned, only, is fun!). Father and mother were pleased because they too had no more cavities. But more than that, mother retained her girlish figure and father lost an accumulated "front porch."

Being a person who is expected to look after the mouth health of his patients primarily, I am still interested in the entire patient. If the entire child patient does not grow, his jaws may not become large enough for his permanent teeth and his teeth may not be nicely formed. Hence, I recommend a well-balanced, well-fortified diet for my patients: one sufficient in milk, eggs, butter, meat, colored vegetables, fresh fruits, whole-grain cereals, whole-grain bread, and cod-liver oil. I always add, however, *"Keep the sweets low to help prevent tooth decay!"*

Editorial

Dr. Harry Allshouse

Many, in the dental profession and elsewhere, were shocked to learn that Dr. Harry Allshouse of Kansas City, a past president of the American Association of Orthodontists, died Tuesday evening, December 7, following a very short illness.

He was the youngest president ever to head the American Association of Orthodontists when he directed that organization in 1938-1939.

Being highly energetic, he had that tireless reserve strength that enabled him to put much into the job in hand. For a number of years he served as head of the Department of Orthodontics at the Kansas City University Dental School. He served in World War I as First Lieutenant in the Army Dental Corps, and, immediately after being mustered out of service, he entered the practice of orthodontics as a specialty, first in San Antonio, Texas, then in Kansas City, Missouri, where he continued until his death.

He was a former president of the Missouri State Dental Association and was regarded as one of the most progressive presidents that the association ever had. It was during his administration that the well-known Missouri Dental Law was passed in that state, and it was his great energy, eternal vigilance, and "never-say-die" spirit that must be given much of the credit for the passing of the law. He spent many days and nights in the rough-and-tumble atmosphere of a state legislature during the formative period of this law. It must have been his earlier training as a college wrestler that gave him the courage to hang on despite formidable opposition until this law was passed.

To Dr. Allshouse, life had a zest; it meant action, enthusiasm, and driving things through to a conclusion. No dental meeting in the United States was too far from home for his attendance and participation. An able organizer and a natural leader, he took an active part in most dental organizations of importance.

Then, too, his outdoor activities were many and diversified. Hunting, however, was his first choice, and it was subsequent to a hunting trip that he contracted a cold which was followed by complications that were responsible for his untimely death at the age of 48 years.

Dr. Allshouse was born in Hannibal, Missouri, Sept. 30, 1895, the son of Mrs. Sada Allshouse and the late H. A. Allshouse. He attended the University of Michigan, and received his degree in dentistry in 1917 from the Kansas City University School of Dentistry.

During the present war period, in addition to his Kansas City practice, he had been assisting in carrying on the practice of Dr. Jack O. O'Donell of Wichita, Kansas, the latter having entered the Armed Forces.

Surviving Dr. Allshouse are his widow, Mrs. Abigail Allshouse of Wichita, Kansas; his mother, Mrs. Sada Allshouse of Kansas City; and his stepson, William D. Eaton, of Kansas City.

He was a big, wholesome man, with a wide acquaintance both professionally and socially. Having a dynamic personality, rich enthusiasm, and radiant good humor, he loved people, enjoyed life, and fairly radiated friendliness and good will.

Some have said of him that he worked hard and played hard, and that he put as much action into his short life as do most men who live to a ripe old age; that is no doubt true.

Another stalwart and enthusiast has departed, and he will be missed by a host of friends and confreres.

Nowhere could the line from Menander be more appropriate than in speaking of this man who liked people and in return was liked by them: "He whom the gods love dies young."

—*H. C. P.*

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There may be members in the Service whose names do not appear in the above list. These members should notify the secretary at once so that their names may be included.

Max E. Ernst, Secretary, American Association of Orthodontists, 1250 Lowry Medical Arts Bldg., St. Paul, Minn.

In Memoriam

Frederic Ernest Haberle

Dr. Haberle died suddenly in his apartment at the Edgewater Beach Hotel, Chicago, Ill., Nov. 9, 1943. Funeral services were held in Chicago, November 12, with interment the following day at Beloit, Wis.

Frederic Ernest Haberle was born in Sterling, Ill., Feb. 26, 1893, and moved to Beloit, Wis., a few years later, where he received his elementary education. He graduated from the University of Iowa School of Dentistry in 1919 and served in the Students Army Training Corps. In 1925 he completed the graduate course in orthodontics at Northwestern University Dental School. At this time he commenced to practice orthodontics exclusively and accepted a position as Instructor in Orthodontics at Northwestern University. Later, he became Assistant Professor of Orthodontics.

Dr. Haberle was past President of the North Side Branch of the Chicago Dental Society, and a member of the Illinois State Dental Society and the American Dental Association. He was Librarian of the American Association of Orthodontists and past President of the Chicago Association of Orthodontists. He also belonged to the Chiselers Club, of which he was past President, Edgewater Golf Club, Masonic Order, Trowel Fraternity, American Legion, and he was past Grand Master of the Chicago Auxiliary and Deputy Grand Master of Eta Chapter of Delta Sigma Delta Fraternity.

He was a Fellow of the American College of Dentists and held an Honorary Membership in the Alumni Association of Northwestern University Dental School. He received the Omicron Kappa Upsilon key for excellence in scholarship and was granted a certificate of proficiency by the American Board of Orthodontics.

Dentistry has suffered a distinct loss in the passing of Fred Haberle. His active participation in the affairs of dental organizations, his influence as a teacher, his professional skill, and his personal friendship were appreciated by his students and his fellow dentists.

To his widow, Kathryn, the members of the American Association of Orthodontists extend their deepest sympathy.

C. R. B.

In Memoriam

Varney E. Barnes

Orthodontics lost another one of its early pioneers when Dr. Varney E. Barnes, of Cleveland, Ohio, passed away on Tuesday, Nov. 22, 1943.

Dr. Barnes was one of the early specialists in the field of orthodontics and designed a number of mechanical appliances that added much to the orthodontic field. Among other things, some will recall the Barnes pliers and the Barnes buccal tubes, the latter being featured by the threaded tube within a tube. The tube became quite popular during the days of the expansion arch E and the wire ligature and grass line epoch of orthodontic development.

According to Dr. Barnes' friends in Cleveland, he was an ardent follower of yachting. He had been active in Coast Guard work since the beginning of World War II and was a charter member of the United States Power Squadron, which consisted of a group of yachtsmen organized nationally to teach navigation and the safe handling of small boats at sea. He was one of the first to use visual models for that type of education. These models were so well received that motion pictures of them have been made for the Navy. Dr. Barnes was also a member of the United States Coast Guard Reserve, for which he taught and served on patrol.

Dr. Barnes had practiced orthodontics as a specialty since 1899, his offices being located in the Keith Building in Cleveland, Ohio, for most of that time.

He was a past President of the Cleveland Dental Society, and a member of the Great Lakes Society of Orthodontists, the Ohio State Dental Society, and the American Dental Association. He was also a member of Delta Sigma Delta Fraternity and the American Association of Orthodontists.

Surviving him are his wife, Nanette; a son, Captain Richard E. Barnes, now in North Africa with the Army Dental Corps; a daughter, Mrs. Ruth N. Bates, of Wilkinsburg, Pa.; a sister, Mrs. D. C. Ober of Cleveland; and two grandchildren.

In the resolutions formally adopted by the Cleveland Dental Society appears the following: "Thus is closed a page of human history and endeavor—a profound loss to the Society in which he served. The Cleveland Dental Society, to which he belonged, takes this opportunity of extending to his family its deep-felt sympathy and condolence."

Dr. Barnes will be greatly missed as one of the hard-working, painstaking pioneers in the field of orthodontics.

H. C. P.

Department of Orthodontic Abstracts and Reviews

Edited by

Dr. J. A. Salzmann, New York City

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

The Missing Mandibular Second Premolar, A Problem in Orthodontic Treatment: By Howard J. Buchner, D.D.S., M.S.D., Oak Park, Ill., *Angle Orthodontist* **12**: 137-151, July, 1942.

In reviewing the literature, one gets the impression that great care has been taken to preserve and to recreate the complete pattern of the dental arch, lest balance be lost in the denture and its relation to basal bone and facial musculature. A critical study of completed cases frequently reveals relationships, which, although described as being satisfactory, are most familiar to those who have created similar conditions and have found them to be unstable. Heroic efforts to obtain harmony and balance have resulted not infrequently in obvious lack of balance.

Much has been said about the necessity of retaining all the tooth units or their equivalent space when missing. Not to do so would result in lack of proper occlusal and proximal forces as a source of stimulation to basal bone. It has been my observation that much of the discourse regarding loss of balance about the face, and lack of stimulation for the proper growth of basal bone structure has been conjecture. The advent of the cephalometric x-ray has made it possible to study growth changes in the untreated as well as the treated patient. Its use has resulted in more comprehensive diagnosis, and has made accurate study of tooth movements and accompanying bone changes possible.

All too frequently, results which on the surface may be interpreted as being an improvement in facial lines, as enhancing harmony and balance, are in reality not so. If in developing a denture the teeth are placed too far anteriorly in relation to structure, the lips will also be held too far forward in what is not a position of harmony and balance but an unnatural, strained position. More growth in the entire face may be most desirable, but where it is lacking, movement of teeth alone is not sufficient and will only result in a prolonged mechanical retention and final collapse in the anterior part of the mandibular dental arch.

Tweed and Nance stress the importance of maintaining teeth in proper relationship to basal bone as a requirement of harmony, balance, and permanence in treated cases. To accomplish this they have not only utilized extensive anchorage preparation, but have also resorted to extraction of teeth in a surprisingly

large percentage of cases. Interpreting their treatment with the best knowledge of growth and development obtainable to date, I am inclined to think that in many respects it is sound. If this is true, mandibular second premolars will be missing in a large percentage of cases where the conditions are such that a shortening of the dental arch length would not be a detriment, and frequently would even be desirable.

There may be an occasional case where it would seem desirable to leave the deciduous second molar in place, permitting it to act as a permanent tooth unit. In such a case it would be necessary to reduce its mesiodistal diameter by cutting away its proximal surfaces. This is something I am not in favor of and have never done. The tooth may also be retained, maintaining its full size. This leaves either the six year molars in slight malocclusion, or slight overlapping of the lateral incisor canine contact, or in some instances in spite of one's best effort, both may exist. Retaining the deciduous teeth, I believe, is for the most part unnecessary and unsatisfactory. Where the second premolar is missing on one side only there may be more justification for maintaining the deciduous tooth; however, even in these cases, I prefer to close the space.

When both lower second premolars are missing, if it is at all possible, that is, if the structures of the face will seem to accommodate such movement without becoming too flat, it is my choice of procedure to remove the mandibular second deciduous molars, also the maxillary second premolars, and close all four spaces so that the six year molars will occlude with their proper antagonists.

The tendency in the past has been to keep the space of missing second premolars, thinking that by so doing it would produce the normal stimulation to bone growth and would result in better harmony and balance. I would be inclined to reverse the statement and say, "If it is possible to ascertain from the study of a case prior to treatment that nature is definitely lacking in growth and will not be able to accommodate the movements necessary to put every tooth unit into the line of occlusion, it would be better to compromise and remove some of the tooth material."

A careful study should be made of each case of missing mandibular second premolars, and where at all possible, the spaces should be closed. It is also preferable in most instances to remove the maxillary second premolars and close the spaces so that the six year molars are left in correct relationship to their antagonists.

Diagnosis should be influenced by the amount of growth present at the beginning of treatment as an indication of the availability of tissue to accommodate tooth movements.

The extent to which basal bone structure develops seems to have no relationship to the enlargement of the dental arches.

If other factors about the denture will persist, treatment of cases with missing mandibular second premolars should be delayed until the eruption of the canines and remaining premolar teeth.

In the cases studied, the occlusion was more satisfactory and required no retention where the spaces were closed, in contrast to prolonged retention where the space was kept open.

Appraisal of results should not be made at the time of completion of treatment. A successful case will continue to be so, following the removal of all mechanical support.

Applied Anatomy of the Head and Neck for Students and Practitioners of Dentistry: By Harry H. Shapiro, D.M.D., Assistant Professor of Anatomy, College of Physicians and Surgeons, Columbia University, Illustrated, pp. 189, Philadelphia, J. B. Lippincott Co., 1943.

Whether he realizes it or not, the practitioner of dentistry is constantly confronted with patients whose treatment requires consideration beyond immediate mechanical measures. It is the knowledge of these underlying factors that determines whether the operator is still in the nineteenth century or whether he is practicing modern dentistry. This is especially true under present wartime conditions. The author has approached the subject from the standpoint of its clinical application. Especial emphasis has thus been placed on problems arising in dental and oral surgical practice.

Constant reference is to be found throughout the book to the various fields of dental practice in the description of the different structures of the head and neck.

Structures to be considered in the examination of the patient are discussed in Chapter I. Here are included, among others, discussion of the anatomy of the face, the oral cavity, the floor of the mouth, the tongue, and the neck. In the chapter on development and growth of the oral and associated structures, due consideration is given to the development of the dentition and congenital and acquired malformations of interest to the dentist. The description of the method to be followed in the interpretation of roentgenograms is original and highly instructive. In the description of the muscles of mastication, correlation is made to their role in the retention of artificial dentures and in displacements due to jaw fractures.

Shapiro has provided the dental student and practitioner with a unique volume which has actually made a practical study of a subject which, while long considered of practical value, has never been so presented. The publishers are to be congratulated on the superior type of bookmaking as evidenced in the make-up and illustrations of this work.

Standard Nomenclature of Disease and Standard Nomenclature of Operations: Edited by Edwin P. Jordan, M.D., American Medical Association, 535 North Dearborn Street, Chicago, 1942.

This book has been the standard on nomenclature of diseases and operations since 1932, when it was published by the National Conference on Nomenclature of Disease. Since 1937 this work has been taken over by the American Medical Association. The aim of the Standard Nomenclature is to include every disease which is clinically recognizable. The method of classification is based on two primary factors: the portion of the body concerned, and the cause of the disorder. These two elements are designated by numerical digits separated from

each other by a hyphen. The digits before the hyphen refer to the site of the disease in the body, while the digits following the hyphen describe the causative agent.

Diseases of the head and face are thus designated 02; 020 referring to the head and face generally, but not affecting a particular system exclusively. 021 refers to the head generally, 022 to the forehead and frontal region, 023 to the parietal region, 024 to the occipital region, 025 to the temporal region, and 026 to the scalp. 027 refers to the face generally, 028 to the cheek, and 029 to the chin. Diseases of the muscular skeletal system, such as, for example, those effecting the bones of the cranium, face, and neck, are designated from 210 to 219.

The first digit denotes the system affected by the disease. The second and third digits refer to the specific part of the system or region. Diseases of the teeth are designated as 613.

This system is to be used primarily by record librarians and hospitals. A visible card filing method is followed. The cabinet is divided into eleven sections representing the eleven major topographic classifications of disease.

The Dental Treatment of Maxillo-Facial Injuries: By W. Kelsey Fry, M.C., M.R.C.S., L.R.C.P., L.D.S., R.C.S. (Eng.), Consulting Dental Surgeon to the Royal Air Force, Consulting Dental Surgeon to the Ministry of Health, Dental Surgeon to Guy's Hospital, P. Rae Shepherd, L.D.S., R.C.S. (Eng), Dental Surgeon, East Grinstead Maxillo-Facial Unit, Alan C. McLeod, D.D.S. (Penn.), B.S.C. (Dent.), Toronto, L.D.S., R.C.S. (Eng.), Dental Surgeon, East Grinstead Maxillo-Facial Unit, Gilbert J. Parfitt, M.R.C.S., L.R.C.P., L.D.S., R.C.S. (Eng.), Dental Surgeon East Grinstead Maxillo-Facial Unit, With Foreword by Professor F. R. Fraser, M.C., F.R.C.P., Director General, Emergency Medical Service, Limited Edition Only, Pp. 268, Illustrated, Price $4.50, Philadelphia, London, Montreal, J. B. Lippincott Company, 1943.

This volume deals with the treatment of injuries which require close cooperation between the plastic and oral or dental surgeon. It includes experiences gained in this war and provides instruction in the treatment of face injuries.

The chapter on Anatomical Consideration treats of the osseous structures in connection with muscular function. An outline is presented of the various types of dentofacial fractures. The typical displacements are discussed and illustrated in a graphic manner, and clinical diagnosis is fully discussed.

General health of the patient including his diet is given due consideration in the section on treatment. The various complications and infections in bone repair are discussed, as is the use of the extra-oral drains. Reduction and fixation of fractures are presented in detail and the splints used are fully illustrated.

This volume is a practical manual which contains all of the methods of treatment which have proven themselves in actual practice. This condensed book will therefore be found of practical value by the practitioner who must obtain his information quickly.

Inheritance of Pseudohypertrophic Muscular Dystrophy: *J. A. M. A.* 125: 4, 1943.

To the Editor.—A primipara aged 36, now five months pregnant, has had progressive muscular dystrophy of a pseudohypertrophic type with involvement of the back and thigh muscles for approximately three and a half years. She had some sort of infection called meningitis at the age of 2½ years and she was unable to walk well until she was 5 or 6 years of age. With the resumption of walking she developed normally and was able to go through high school and a teaching career, engaging in horseback riding, basketball, tennis and the other common sports without noting any weakness. The trouble has been gradually making its appearance during the last three and a half years, and since the beginning of pregnancy the symptoms have been aggravated. Can the patient be carried safely through several more months of pregnancy and then an elective cesarean section done with sterilization? What is the prognosis with regard to the baby? Do you advise interruption of the pregnancy at once with sterilization. One brother died at the age of 19 with so-called Bright's disease, but he had a weak back. One sister died at the age of 30 with pneumonia, but she had had a weak back for five years preceding the pneumonia on account of typhoid.

—M.D., South Carolina.

Answer.—It is doubtful that the infection at the age of 2½ years called meningitis has any direct relation with the patient's present condition. Although somewhat late in onset, it is probable that the patient is suffering from pseudohypertrophic muscular dystrophy, although such a diagnosis cannot be made without equivocation, as there was a long history of good health and normal muscular action up to the third decade of life. It is not unusual, however, for the condition to be aggravated during pregnancy. Lacking here is an exact description of the patient's present condition; moreover, the evidence that her brother and sister, both deceased, had "weak backs" does not definitely confirm the diagnosis of the familial type of pseudohypertrophic muscular dystrophy.

If the diagnosis is correct, and particularly if the condition has appeared in previous generations of the family, one has seriously to consider the possibility of transmitting this disease to another generation. Whether this would take place in an individual case is not an easy question to decide. The disease is inherited in about 50 per cent of the children, the sexes being approximately equally affected. This is based on studies of cases in which the disease appeared in successive generations and had the characteristics of a mendelian domination. On the other hand, if the disease has not occurred in previous generations it may be looked on as a recessive factor and the chances of inheritance are much less. There are sporadic cases, usually occurring in the male, and these appear in a frequency of about three to one. It is impossible, therefore, to give any prognosis with regard to the baby in the case presented. There is no indication, as far as the mother is concerned, that the pregnancy should be interrupted on account of her disease. Advice with regard to the continuance of the pregnancy based on the possibility of inheritance cannot naturally be given to the patient in a categorical manner. All one can do is to place the known facts before the

patient. In the case presented here there are so many unknown, or at least uncertain, factors that definite advice cannot justifiably be given.

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Diehl, F., Hansen, K., and von Ubisch, G.: Deutsche Ztschr. f. Nervenh. **99**: 54, 1927.
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Weitz, W.: *Ibid.* **72**: 143, 1921; **102**: 209, 1928; **107**: 316, 1929.

Calcium Deficient Diet as Aid in Correcting Bone Deformities: *J. A. M. A.* **125**: No. 4, 1943.

To the Editor.—Can you discuss the reduction of deformity of the long bones by a diet poor in calcium and rich in phosphorus and the application of casts to the straightened bone as soon as the absorption of calcium has been sufficient?

J. W. Hopkins, M.D., Glendale, Calif.

Answer.—In an article published in the *Archives of Surgery* (**28**: 742 [April] 1934) Ghormley and Stuck described an experiment in which Ghormley had been assisted by Aub and Bauer of Boston. This consisted in the feeding of a low calcium diet with the development of a definite negative calcium balance for a patient in whom correction was being attempted for a severe scoliosis. It was the opinion of the authors that this aided in obtaining correction and that the bones at the time of operation were found to be much softer than normal. Furthermore, it was their opinion that calcification and new bone formed more rapidly in this patient after operation when the patient was again placed on an adequate diet than had been seen in patients who had not gone through an initial period of decalcifying of bone through diet. Several other surgeons have attempted to make bones sufficiently soft to be able to reshape them by feeding a diet poor in calcium and rich in phosphorus or through the administration of ammonium chloride.

As an addition to this program, Nachlas of Baltimore found that, if a plaster cast was applied to the extremity in which there was a deformity which the surgeon wished subsequently to correct while the patient was being given a diet insufficient in calcium, the bones in that extremity atrophied more rapidly than did those of the rest of the body because of the immobilization. Nachlas expressed the opinion that in certain cases it was possible to correct these deformities, which otherwise probably would not have been correctable without open surgery. This work was not published but was discussed before several groups of physicians.

The methods referred to, however, have not been accepted as practicable by a vast majority of orthopedic surgeons. As far as the literature would indicate, and from discussion with orthopedic surgeons, it seems probable that the method will never be used widely.

The Development of Bone: *British Dental Journal* **74**: 133-134, March 5, 1943.

Sir: In a paper "Diagnosis in Orthodontic Practice," Dr. Milo Hellman says that "one gains the impression that there is more vague talk than exact

knowledge about growth and development.''. I have expressed the same opinion at different society meetings and in letters to the British Dental Journal.

It is not generally realized that the usual textbook descriptions of development are very unsatisfactory, for, in addition to the many omissions which make it impossible to visualize the growth of the bones from early embryonic life to maturity, many statements are made about bone growth that do not stand critical examination. The madder experiments are almost universally accepted as indicating the method by which bones grow, but the evidence in support is of a very dubious character and the interpretations are based, for the most part, on theoretical inferences which have little relation to the demonstrable facts. Examination of the head of the human fetus, and of the heads of the fetal and young pig, sheep, ox, horse, and rat, shows that the bones of the head do not grow in the manner described in the madder interpretations and that membrane bones do not move or expand by a process of reformation (see abstract in Proceedings of the Anatomical Society, *Journal of Anatomy*, January, 1942).

The examination shows, moreover, that membrane bone formation is preceded by a condensation of connective tissue cells which assume the outline of the future bone. Ossification is, therefore, a secondary process, which is preceded by the growth of a membranous model, growth taking place in such a manner that muscles, nerves, and models bear an identical mutual relationship throughout development. The evidence suggests that accretion and absorption are controlled by the growth of the model.

There does not appear to be any evidence that tooth germs or teeth are moved by bone growth. On the other hand, they are invariably attached to the mucous membrane of the enlarging oral cavity, and this connection is the medium by which all their movements, including eruption, are controlled.

The examination of heads from early embryonic life to adolescence enables one to give a detailed and consecutive description of the developmental movements of the tooth germs in relation to the bones with which they are associated, to demonstrate the difference of developmental conditions in man and other mammals, and to show that the influence of function and other factors upon the developing organism is not understood and has been grossly exaggerated.

I have endeavored to prepare for publication a more exact account of these general principles because there is no doubt that the fundamental causes of dental disease and its treatment (including dental caries and maloclusion) will not be understood until exact knowledge of the principles of development is obtained. Unfortunately, present circumstances make it impossible for me to continue this work.

Yours faithfully,
S. Wilson Charles.

Devonia, Rickmansworth, Herts.

News and Notes

Medical and Surgical Relief Committee of America

January 1, 1944

Dear Doctor:

There is a critical need for medical and surgical supplies that may lie hidden and forgotten in your office: discarded or tarnished instruments, surplus drugs, vitamins, infant foods. Collected, packaged, sent to the Medical and Surgical Relief Committee, they can play a vital role in its program of medical relief for the armed and civilian forces of the United Nations.

Surgical instruments and medicines are sought after by physicians and pharmacists' mates of our Navy—are hungrily snatched by the medical corps of our Allies. The work of war-zone hospitals and welfare agencies is too often crippled by the lack of medical supplies. Community nurseries in this country, refugee camps abroad cry out for vitamins and baby foods for their ill-nourished charges.

In the pages of this JOURNAL you may have read about the Committee. It has supplied over 900 sub-hunting and patrolling ships of the Navy with emergency medical kits; equipped battle-dressing stations on battleships, destroyers, and cruisers. The Committee's roll call of medical requests, not one of which has been turned away, reads like a world geography: the Fighting French in North Africa and Tahiti; the Royal Norwegians in Canada and Iceland; the West Indies; South and Central Africa; China; India; Great Britain; Yugoslavia; Greece; Syria; Russia; Alaska; and, of course, the United States.

To meet the demands that pour into headquarters, the Committee needs all types of instruments, especially clamps, scalpels, forceps, and all kinds of drugs from iodine to sulfa products. By contributing what you can spare, you will help speed another shipment of sorely needed medical aid.

Very sincerely yours,

JOSEPH PETER HOGUET, M.D., Medical Director, 420 LEXINGTON AVENUE, NEW YORK 17, N. Y.

American Dental Association, a Message From the President

The Treasury Department of the United States has embarked upon its Fourth War Loan Drive, and appeals to the American Dental Association for support and leadership in this line of defense for our country at war.

All of us, whether in civilian practice on the home front, or in dental practice in the Armed Forces, should enthusiastically invest in our own government in order to preserve it and to make it secure. In this drive the participation works two ways: security for the Nation, and financial security for our own future. Your government does not ask you to give, it only asks you to loan your money.

As President of our great American Dental Association, I ask that, in this crucial and, possibly, decisive year, the members of the dental profession loan to Uncle Sam the greatest amount of money they have yet loaned. It is not necessary for me to appeal to you through emotion or patriotism; you are intelligent, practical, scientific men and women interested in America and our way of life. You want to see preserved all that we have worked and striven for, so that our great nation may continue in leadership as the great humanitarian country that it is.

To preserve the house we have built and cherished, we must maintain and defend it. In the year ahead, these two precepts must be borne in mind, and we must cheerfully and willingly give support if we are to maintain and defend. As leaders in civic, community, and professional life, we must set an example by leading in this great war effort. Lend, then, to the

fullest extent of your ability. For your guidance, based on surveys, we assume that you will be buying at least $50 worth of bonds per month during 1944 (many will be buying more). Therefore, during January and February, the total period covered by the Fourth War Loan Drive, you would be buying at least $100 worth of war bonds. Now, the Treasury Department asks every American to buy at least an extra $100 war bond over and above regular purchases. On this basis, the minimum quota from every dentist in the United States would be $200 worth of bonds during the Fourth War Loan Drive. I suggest this as a minimum. Those who can lend more should not be limited by this minimum quota.

C. RAYMOND WELLS, President.

Suggested Quotas for Fourth War Loan Drive

STATE	NUMBER OF DENTISTS 1943	AMOUNT OF QUOTA
Alabama	505	$101,000
Arizona	108	21,600
Arkansas	326	65,200
California	4,909	981,800
Colorado	625	125,000
Connecticut	982	196,400
Delaware	89	17,800
District of Columbia	567	113,400
Florida	644	128,800
Georgia	720	144,000
Idaho	202	40,400
Illinois*	4,593	918,600
Indiana	1,596	319,200
Iowa	1,787	357,400
Kansas	843	168,600
Kentucky	758	151,600
Louisiana	741	148,200
Maine	351	70,200
Maryland	686	137,200
Massachusetts	2,653	530,600
Michigan	2,570	514,000
Minnesota*	1,628	325,600
Mississippi	293	58,600
Missouri	2,172	434,400
Montana	253	50,600
Nebraska	739	147,800
Nevada	51	10,200
New Hampshire	200	40,000
New Jersey	2,325	465,000
New Mexico	96	19,200
New York	7,894	1,578,800
North Carolina*	708	141,600
North Dakota	224	44,800
Ohio	3,438	687,600
Oklahoma	608	121,600
Oregon	662	132,400
Pennsylvania	5,414	1,082,800
Rhode Island	365	73,000
South Carolina*	310	62,000
South Dakota	255	51,000
Tennessee	848	169,600
Texas	1,064	212,800
Utah	248	49,600
Vermont	115	23,000
Virginia	755	151,000
Washington*	1,005	201,000
West Virginia	515	103,000
Wisconsin	1,950	390,000
Wyoming	106	21,200
NATIONAL	60,496	$12,099,200

*Figures on number of dentists were taken from state registration lists for 1941. In a few instances, it was necessary to use tabulations from the sixteenth census volumes (1940).

A Challenge to Civilian Dentists

How dentists in private practice can contribute to the war effort without as much as leaving their offices is told by the Victory Dental Program Committee, Council on Dental Health, of the American Dental Association. The civilian dentist can help to increase the physical fitness of the war manpower right at the dental chair by giving priority appointments to boys and girls in the upper high school grades who will shortly be entering the Armed Forces or necessary war industries.

A nation-wide Physical Fitness Dental Program is now being conducted by the Council on Dental Health with the cooperation of the United States Office of Education and the United States Public Health Service. A recent issue of *Education for Victory*, the official publication of the United States Office of Education, carries a leading article in which dental care is stressed as an important aim of education in wartime. Educators and school health workers are called on to support the dental fitness program as one of the essentials in the Victory Corps and Physical Fitness Programs now operating in the various states and local communities.

This program presents a striking example of the cooperation of organized dentistry with federal and state health and educational agencies and is a direct challenge to the private dentist on the home front. Many dentists in private practice are finding themselves hard pressed to keep up with the demands of patients for service. The induction of dentists into the Armed Services has left many communities without private practitioners, in the face of increased demand and population shifts due to war activity.

The civilian dentist, no matter how pressed by adult patients, owes it to himself as a professional man to give priority appointments to high school boys and girls who will soon be helping, directly or indirectly, to fight the war in which their country is engaged. How well dentists respond to this urgent call will do much to determine the professional regard shown them by these government agencies in the future.

This program presents a splendid opportunity for the dentist at home who has been wondering how he can help to contribute to the war effort. Here is a job which the dentist alone can do. He can make dentally fit, and thus more efficient, the young men and young women who are about to take up the burdens of war. This is your job. Are you going to accept this challenge?

Educators and health workers in more than forty states are cooperating. If your local community needs assistance in carrying on the Victory Corps-Physical Fitness Dental Program, write at once for information to the director of the state dental program in the state department of health, the chairman of the Council on Dental Health of the state dental society, or to the Bureau of Public Relations, American Dental Association, 222 E. Superior Street, Chicago, Illinois.

AMERICAN DENTAL ASSOCIATION, COUNCIL ON DENTAL HEALTH.

War Service Committee of American Dental Association

The War Service Committee of the American Dental Association made statement under the date of December 15 in the form of a letter to be released to the dental profession as follows:

"The War Service Committee desires to express its appreciation to the Secretaries of State Dental Societies, State Military Affairs Committees, and others, for their prompt response to the Committee's request for current information on the shortage of important instruments used in dental practice, such as hand pieces and burs, in order that the information might be assembled and presented to the War Production Board. Forty-odd states responded, which gives the Committee and the WPB a fine cross section of the sentiment of the country on this vital matter of dental instruments. It will be used by the government agency mentioned in its deliberations with the officials of the Armed Forces, to the end that it is hoped an equitable distribution may be made between the Armed Forces and civilian practice. The result of the survey indicates clearly that there is a serious shortage in dental burs and dental hand pieces, and that additional efforts must be made by the manufacturers, with the aid of the War Production Board if necessary, to increase the production of these instruments.

"Resharpening of dental burs, the increased use of stones, diamond points, and cutting instruments, and the repair of hand pieces are being resorted to by thousands of dentists in civilian practice and in the Armed Forces, and the Committee emphasizes that this should be continued and extended by all members of the dental profession, including those in the Armed Forces, if we are to be carried through the emergency with minimum requirements.

"Frequent conferences are being held with governmental agencies and with dental manufacturers, at which President C. Raymond Wells is in attendance, in an effort to alleviate these conditions so far as practicable. Some of these entail the protection of the manpower of the manufacturers and increased facilities, and include emphasis upon the use of diamond points and the resharpening of burs, all of which should have the prompt and complete cooperation of every dentist in civilian practice and the Armed Forces."

C. Willard Camalier, Chairman

Prize Essay Contest

The Research Committee of the American Association of Orthodontists has been empowered by the Board of Directors to conduct a prize essay contest. The prize has been set at $200.00, and will be offered annually until further notice. The terms of the competition are as follows:

Eligibility.—Any student enrolled in a recognized university, or any person who has completed his or her formal education in orthodontics not more than three years prior to Jan. 1, 1944, is eligible to compete for the prize.

Essay.—The essay must represent a piece of original research having a direct bearing on the field of orthodontics. It may relate either to a biologic or clinical problem and may represent material that has been offered in partial fulfillment of the requirements of a graduate or postgraduate degree, or any graduate, postgraduate, or undergraduate contest. Papers previously submitted and now published or in press will be accepted for the present contest. All essays must be in the hands of the committee by Feb. 1, 1944. If no essay is deemed worthy by the committee, the prize will be withheld.

Award.—The prize-winning essay will be accorded a place on the scientific program of the annual meeting of the Association, at which time the prize will be awarded. The Association will retain publication rights on the first three choices.

For further information, address

Allan G. Brodie, Chairman, Research Committee, A. A. O., 30 North Michigan Ave., Chicago.

American Association of Orthodontists

The next meeting of the American Association of Orthodontists will be held at the Edgewater Beach Hotel, Chicago, Ill., April 25, 26, 27, 1944. Members of the American Dental Association are invited to attend this meeting upon the presentation of proper credentials and payment of the registration fee. Credentials should be obtained in advance from the secretary of the American Association of Orthodontists or the secretary of a constituent orthodontic society.

Max E. Ernst, Secretary, 1250 Lowry Medical Arts Bldg., St. Paul, Minn.

Research Section, American Association of Orthodontists

At the present time there is no opportunity afforded men interested in orthodontic research to meet together and discuss their problems. At the last meeting of the American Association of Orthodontists it was proposed that the Research Committee be empowered to arrange a portion of the program for the next annual meeting. The meeting will be held in Chicago, April 25, 26, and 27, 1944.

The program will consume half a day and will be restricted to ten- or fifteen-minute reports by men actively engaged in research in orthodontics, or in its allied fields. Time will be allowed for discussion of all presentations, in order that the greatest benefit may accrue to those participating. All institutions and all individuals are invited to request time.

For further information or time reservations on the programs address communication to ALLAN G. BRODIE, Chairman, Research Committee, A. A. O., 30 North Michigan Ave., Chicago.

Proposed Changes in the Constitutional By-Laws of the American Association of Orthodontists

The object of these proposed changes is to establish definite boundaries for the constituent societies.

1. The New York Society shall consist of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, Pennsylvania, New York, New Jersey, Delaware, Maryland, District of Columbia, and the Maritime Provinces of Canada.

2. The Southern Society shall consist of Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Kentucky, Mississippi, and Louisiana east of the Mississippi River.

3. The Great Lakes Society shall consist of Ontario, Michigan, Ohio, and Indiana.

4. The Central Society shall consist of Illinois, Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Iowa, and Missouri.

5. The Southwestern Society shall consist of Kansas, Oklahoma, Texas, Arkansas, and Louisiana west of the Mississippi River.

6. The Rocky Mountain Society shall consist of Montana, Wyoming, Utah, Colorado, and New Mexico.

7. The Pacific Coast Society shall consist of California, Oregon, Washington, Arizona, Nevada, Idaho, Alaska, Hawaiian Islands, Philippine Islands, and British Columbia.

These proposed changes are to be voted on at the 1944 meeting.

MAX E. ERNST, Secretary

American Board of Orthodontics

The 1944 meeting of the American Board of Orthodontics will be held at the Edgewater Beach Hotel, Chicago, Illinois, April 23 and 24. Orthodontists who desire to be certificated by the Board may obtain application blanks from the Secretary, Dr. Bernard G. deVries, 705 Medical Arts Building, Minneapolis, Minn.

Southwestern Society of Orthodontists

The twenty-fourth annual meeting of the Southwestern Society of Orthodontists will be held in Shreveport, Louisiana, on Feb. 28 and 29, and March 1 and 2, 1944, with headquarters at the Washington-Youree Hotel.

JAMES O. BAILEY, Secretary-Treasurer

New York Society of Orthodontists

The spring meeting of the New York Society of Orthodontists will be held at the Waldorf-Astoria Hotel, New York, New York, on Monday and Tuesday, March 6 and 7, 1944.

NORMAN L. HILLYER, Secretary-Treasurer

Thomas P. Hinman Mid-Winter Clinic

The Thomas P. Hinman Mid-Winter Clinic will be held at the Municipal Auditorium, Atlanta, Ga., March 26, 27, 28, 1944.

Wells Testimonial Dinner

On Sunday evening, Dec. 5, 1943, at 7 P.M., at the Hotel St. George, Captain C. Raymond Wells (D. C.), U. S. N. R., was tendered a testimonial dinner by the Second District Dental Society in celebration of his election as President of the American Dental Association.

Many distinguished guests from far and wide joined in the celebration, including Major General Lewis B. Hershey, National Director of Selective Service, Rear Admiral Alexander G. Lyle (D. C.), U. S. N., Chief of the Dental Corps, Colonel Leonard G. Rowntree (M. C.), U. S. A., Chief Medical Officer, National Selective Service, Major-General Robert H. Mills (D. C.), U. S. A., Chief Dental Officer, and Dr. Leon L. Abbey, President, New York State Dental Society.

Chilean Orthodontic Society

The Sociedad de Ortodoncia de Chile (Chilean Orthodontic Society) was recently founded for the study of orthodontics.

The first board of directors elected are as follows:

President, Dr. Alejandro Manhood, Avda. B. O'Higgins 878
Vice-President, Dr. Arturo Toriello, Calle Londres 63
Secretary, Dr. Rafael Huneeus, Calle Agustinas 1572
Treasurer, Dr. Pedro Gandulfo, Calle Londres 63

Orthodontic Society of Argentina

According to volume 8, number 14, of the official organ of the Sociedad Argentina de Ortodoncia, membership of that organization now numbers seventy-five.

The officers of the association are:

Director, Dr. Raul Otano Antier
Secretary, Dr. Miguel A. Finocchietti
Secretary-Administrator, Dr. Edmundo G. Locci

OFFICERS OF ORTHODONTIC SOCIETIES*

American Association of Orthodontists

President, J. A. Burrill - - - - - - - - - - 25 East Washington St., Chicago, Ill.
Secretary-Treasurer, Max E. Ernst - - - 1250 Lowry Medical Arts Bldg., St. Paul, Minn.
Public Relations Bureau Director, Dwight Anderson - 292 Madison Ave., New York, N. Y.

Central Section of the American Association of Orthodontists

President, Charles R. Baker - - - - - - - - - - - - 636 Church St., Evanston, Ill.
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President, Henry D. Cossitt - - - - - - - - - - - 942 Nicholas Bldg., Toledo, Ohio
Secretary-Treasurer, C. Edward Martinek - - - - - - 661 Fisher Bldg., Detroit, Mich.

New York Society of Orthodontists

President, William C. Keller - - - - - - - - - - 40 East 49th St., New York, N. Y.
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President, J. Camp Dean - - - - - - - - - - - - 1624 Franklin St., Oakland, Calif.
Secretary-Treasurer, Earl F. Lussier - - - - - - - 450 Sutter St., San Francisco, Calif.

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Southern Society of Orthodontists

President, M. Bagley Walker - - - - - - - - - - 618 Medical Arts Bldg., Norfolk, Va.
Secretary-Treasurer, E. C. Lunsford - - - - - - - - 2742 Biscayne Blvd., Miami, Fla.

Southwestern Society of Orthodontists

President, Hamilton D. Harper - - - - - - - - Medical Arts Bldg., Shreveport, La.
Secretary-Treasurer, James O. Bailey - - - - - Hamilton Bldg., Wichita Falls, Texas

American Board of Orthodontics

President, William E. Flesher - - - - - 806 Medical Arts Bldg., Oklahoma City, Okla.
Vice-President, Frederic T. Murlless, Jr. - - - - 43 Farmington Ave., Hartford, Conn.
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